CPC   COOPERATIVE PATENT CLASSIFICATION

G06K   **RECOGNITION OF DATA; PRESENTATION OF DATA; RECORD CARRIERS; HANDLING RECORD CARRIERS**

NOTE

This subclass covers:

- marking, sensing, and conveying of record carriers;
- recognising characters or other data;
- presenting visually or otherwise the data recognised or the result of a computation.

This subclass does not cover printing per se.

G06K 1/00		**Methods or arrangements for marking the record carrier in digital fashion** (interpreting G06K 3/02)
G06K 1/02	.	by punching (punching in general B26F)
G06K 1/025	..	{Details, e.g. construction of the punching mecanism}
G06K 1/04	..	controlled by sensing markings on the record carrier being punched (sensing of record carriers G06K 7/00)
G06K 1/05	..	High-speed punches, e.g. controlled by electric computer
G06K 1/06	..	Manually-controlled device
G06K 1/08	...	Card punches
G06K 1/10	...	Tape punches (specially adapted for a particular purpose, see the relevant subclass, e.g. for telegraphy H04L)
G06K 1/12	.	otherwise than by punching (printing in general B41, e.g. B41J)
G06K 1/121	..	{ by printing code marks (applying code marks to labels B65C 9/46; marking or coding completed packages B65B 61/26)}
G06K 1/123	...	{for colour code marks}
G06K 1/125	..	{by magnetic means}
G06K 1/126	..	{by photographic or thermographic registration (recording apparatus for measuring instruments G01D 15/00)}
G06K 1/128	..	{by electric registration, e.g. electrolytic, spark erosion (recording apparatus for measuring instruments G01D 15/06; information storage in general G11)}
G06K 1/14	.	by transferring data from a similar or dissimilar record carrier
G06K 1/16	..	by reproducing data from one punched card on to one or more punched cards without the code representation, i.e. duplicating
G06K 1/18	..	by transferring data from one type of record carrier on to another type of record carrier, e.g. from magnetic tape to punched card
G06K 1/20	.	Simultaneous marking of record carrier and printing-out of data, e.g. printing-punch

G06K 1/22	. .	Simultaneous marking and printing on different record carriers, e.g. on different types of record carrier

G06K 3/00   **Methods or arrangements for printing of data in the shape of alphanumeric or other characters from a record carrier, e.g. interpreting, printing-out from a magnetic tape**

G06K 3/02	.	Translating markings on a record carrier into printed data on the same record carrier, i.e. interpreting

G06K 5/00   **Methods or arrangements for verifying the correctness of markings on a record carrier; Column detection devices**

G06K 5/02	.	the verifying forming a part of the marking action
G06K 5/04	.	Verifying the alignment of markings

G06K 7/00   **Methods or arrangements for sensing record carriers,** { e.g. for reading patterns}(G06K 9/00 takes precedence)

G06K 7/0004	.	{Hybrid readers}
G06K 7/0008	.	{General problems related to the reading of electronic memory record carriers, independent of its reading method, e.g. power transfer}
G06K 7/0013	.	{ by galvanic contacts, e.g. card connectors for ISO-7816 compliant smart cards or memory cards, e.g. SD card readers (connectors in general H01R 13/00; connectors for SIM cards used in mobile phones or the like H04B 1/38)}
G06K 7/0017	. .	{ the reading head of the connector being removably attached to the housing}
G06K 7/0021	. .	{for reading/sensing record carriers having surface contacts}
G06K 7/0026	. . .	{ the galvanic contacts of the connector adapted for landing on the contacts of the card upon card insertion}
G06K 7/003	. . .	{ means for pressing the connector contacts in the direction of the card contacts to assure trustworthy electrical connection between card and connector}
G06K 7/0034	. .	{ the connector being capable of simultaneously receiving a plurality of cards in the same insertion slot}
G06K 7/0039	. . .	{ the plurality of cards being cards of the same type and format, e.g. two ISO 7816 smart cards}
G06K 7/0043	. . .	{ the plurality of cards being cards of different formats, e.g. SD card and memory stick}
G06K 7/0047	. .	{for reading/sensing record carriers having edge contacts}
G06K 7/0052	. .	{ connectors capable of contacting cards of different formats, e.g. memory stick and SD card readers sharing at least one connector contact and the associated signal line, e.g. both using the same signal line for input or output of data}
G06K 7/0056	. .	{ housing of the card connector}
G06K 7/006	. . .	{ the housing being a portable casing}
G06K 7/0065	. . .	{ comprising keyboard or display, e.g. a pocket calculator sized casing suitable for off-line checking the remaining money on a smart banking card}
G06K 7/0069	. . .	{ including means for detecting correct insertion of the card, e.g. end detection

switches notifying that the card has been inserted completely and correctly}

G06K 7/0073	. . .	{ having multiple insertion slots, the respective slots suited for the same or different card form factors}
G06K 7/0078	. . .	{ reinforced housing for protection against damage, be it due malevolent action, such as drilling and other ways of forced entry, or by accident, such as shock due to dropping}
G06K 7/0082	. . .	{ comprising an arrangement for protection against electrostatic discharge, e.g. by grounding part of the conductive housing}
G06K 7/0086	. .	{ the connector comprising a circuit for steering the operations of the card connector}
G06K 7/0091	. . .	{ the circuit comprising an arrangement for avoiding intrusions and unwanted access to data inside of the connector}
G06K 7/0095	.	{ Testing the sensing arrangement, e.g. testing if a magnetic card reader, bar code reader, RFID interrogator or smart card reader functions properly (testing of electrical circuits G01R 31/28)}
G06K 7/01	.	Details
G06K 7/015	. .	Aligning or centering of the sensing device with respect to the record carrier (in general G11B)
G06K 7/016	. .	Synchronisation of sensing process (in general G11B)
G06K 7/0163	. . .	{by means of additional timing marks on the record-carrier}
G06K 7/0166	. . .	{by means of clock-signals derived from the code marks, e.g. self-clocking code}
G06K 7/02	.	by pneumatic or hydraulic means, e.g. sensing punched holes with compressed air; by sonic means; {by ultrasonic means}
G06K 7/04	.	by mechanical means, e.g. by pins operating electric contacts
G06K 7/042	. .	{controlling electric circuits}
G06K 7/045	. . .	{whereby the entire datafield of the record carriers is simultaneously sensed}
G06K 7/047	. . .	{whereby the data field of the record carriers is sensed successively column after column}
G06K 7/06	.	by means which conduct current when a mark is sensed or absent, e.g. contact brush for a conductive mark
G06K 7/065	. .	{for conductive marks}
G06K 7/08	.	by means detecting the change of an electrostatic or magnetic field, e.g. by detecting change of capacitance between electrodes
G06K 7/081	. .	{electrostatic, e.g. by detecting the charge of capacitance between electrodes}
G06K 7/082	. .	{using inductive or magnetic sensors}
G06K 7/083	. . .	{inductive (G06K 7/08C6 takes precedence)}
G06K 7/084	. . . .	{sensing magnetic material by relative movement detecting flux changes without altering its magnetised state}
G06K 7/085	. . . .	{metal detectors}
G06K 7/086	. . . .	{sensing passive circuit, e.g. resonant circuit transponders}
G06K 7/087	. . .	{ flux-sensitive, e.g. magnetic, detectors (G06K 7/08C6 takes precedence)}
G06K 7/088	. . . .	{using magneto-sensitive switches, e.g. reed-switches}

| G06K 7/089 | . . | {hand-held scanners} |

| G06K 7/10 | . | by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation |
| G06K 7/10009 | . . | { sensing by radiation using wavelengths larger than 0.1 mm, e.g. radio-waves or microwaves} |

NOTE

G06K 7/10019	. . .	{ resolving collision on the communication channels between simultaneously or concurrently interrogated record carriers. (collision between the communication channels used by wireless communication devices, where the solution is not particularly adapted for RFIDs or the like, H04W 74/08)}
G06K 7/10029	. . . .	{ the collision being resolved in the time domain, e.g. using binary tree search or RFID responses allocated to a random time slot}
G06K 7/10039	. . . . .	{ interrogator driven, i.e. synchronous}
G06K 7/10049	. . . . . .	{ binary tree}
G06K 7/10059	. . . . .	{ transponder driven}
G06K 7/10069	. . . .	{ the collision being resolved in the frequency domain, e.g. by hopping from one frequency to the other (frequency hopping or spread spectrum techniques H04B 7/00)}
G06K 7/10079	. . . .	{ the collision being resolved in the spatial domain, e.g. temporary shields for blindfolding the interrogator in specific directions}
G06K 7/10089	. . . . .	{ the interrogation device using at least one directional antenna or directional interrogation field to resolve the collision (direction or location finding, such as triangulation techniques, G01S13)}
G06K 7/10099	. . . . . .	{ the directional field being used for pinpointing the location of the record carrier, e.g. for finding or locating an RFID tag amongst a plurality of RFID tags, each RFID tag being associated with an object e.g. for physically locating the RFID tagged object in a warehouse}
G06K 7/10108	. . . .	{ interrogating only those RFIDs that fulfill a predetermined requirement, e.g. selecting all RFIDs having the same speed and moving in a cloud like fashion. e.g. on the same train; interrogating only RFIDs having a certain predetermined temperature, e.g. in the same fridge, another possibility being the active ignoring of a group of tags that fulfill a predetermined requirement, equivalent to the Boolean NOT operation}
G06K 7/10118	. . .	{ the sensing being preceded by at least one preliminary step}
G06K 7/10128	. . . .	{ the step consisting of detection of the presence of one or more record carriers in the vicinity of the interrogation device}
G06K 7/10138	. . . .	{ the step consisting of determining the type of record carrier, e.g. to determine if the record carrier is an RFID tag of the long or short range type, or to determine the preferred communication protocol of the RFID tag}
G06K 7/10148	. . . .	{ the step consisting of dynamically tuning the resonant circuit of the interrogation device that is emitting the interrogation signal, e.g. for impedance matching inside of the interrogation device (for tuning related to loop aerials in general H01Q 7/00)}
G06K 7/10158	. . .	{ methods and means used by the interrogation device for reliably powering the wireless record carriers using an electromagnetic interrogation field}
G06K 7/10168	. . . .	{ the powering being adversely affected by environmental influences, e.g. unwanted energy loss in the interrogation signal due to metallic or capacitive objects in the proximity of the interrogation device or in the proximity of the interrogated record carrier}

G06K 7/10178	. . . .	{ including auxiliary means for focusing, repeating or boosting the electromagnetic interrogation field (comparable booster antennas integrated on the record carrier itself G06K 19/07794)}
G06K 7/10188	. . . . .	{ the repeating consisting of intelligently propagating data from record carriers via intermediate stations to the interrogation device, e.g. a distant RFID or RFID falling in a "shadow" region sending its identification data to an interrogation device using at least the help of one further RFID that is positioned in a region "visible" to the interrogation device, the further RFID therefore functioning as a relay station}
G06K 7/10198	. . .	{ setting parameters for the interrogator, e.g. programming parameters and operating modes}
G06K 7/10207	. . . .	{ parameter settings related to power consumption of the interrogator}
G06K 7/10217	. . . .	{ parameter settings controlling the transmission power of the interrogator}
G06K 7/10227	. . . .	{ loading programming parameters or programs into the interrogator, e.g. for configuring the interrogator}
G06K 7/10237	. . .	{ the reader and the record carrier being capable of selectively switching between reader and record carrier appearance, e.g. in near field communication [NFC} devices where the NFC device may function as an RFID reader or as an RFID tag]
G06K 7/10247	. . . .	{ issues specific to the use of single wire protocol [SWP} in NFC like devices]
G06K 7/10257	. . .	{ arrangements for protecting the interrogation against piracy attacks (computer security in general G06F 21/00; jamming of communication, countermeasures H04K 3/00; secret communication H04K 1/00)}
G06K 7/10267	. . . .	{ the arrangement comprising a circuit inside of the interrogation device}
G06K 7/10277	. . . .	{ the arrangement being mechanical, such as reinforced housings or protective cages against unlawful entry}
G06K 7/10287	. . . .	{ the arrangement including a further device in the proximity of the interrogation device, e.g. signal scrambling devices}
G06K 7/10297	. . .	{ arrangements for handling protocols designed for non-contact record carriers such as RFIDs NFCs, e.g. ISO/IEC 14443 and 18092 (Protocols for data communication in general, see H04L 29/06)}
G06K 7/10306	. . . .	{ ultra wide band}
G06K 7/10316	. . .	{ using at least one antenna particularly designed for interrogating the wireless record carriers (antennas in general H01Q 1/22)}
G06K 7/10326	. . . .	{ the antenna being of the very-near field type, e.g. capacitive}
G06K 7/10336	. . . .	{ the antenna being of the near field type, inductive coil}
G06K 7/10346	. . . .	{ the antenna being of the far field type, e.g. HF types or dipoles}
G06K 7/10356	. . . .	{ using a plurality of antennas, e.g. configurations including means to resolve interference between the plurality of antennas}
G06K 7/10366	. . .	{ the interrogation device being adapted for miscellaneous applications}
G06K 7/10376	. . . .	{ the interrogation device being adapted for being moveable}
G06K 7/10386	. . . . .	{ the interrogation device being of the portable or hand-handheld type, e.g. incorporated in ubiquitous hand-held devices such as PDA or mobile phone, or in the form of a portable dedicated RFID reader}
G06K 7/10396	. . . . .	{ the interrogation device being wearable, e.g. as a glove, bracelet, or ring (wearable aerials in general H01Q 1/27)}
G06K 7/10405	. . . . .	{ the interrogation device including an arrangement for sensing environmental parameters, such as a temperature or acceleration sensor, e.g. used as an on/off trigger or as a warning means}

G06K 7/10415	. . . .	{ the interrogation device being fixed in its position, such as an access control device for reading wireless access cards, or a wireless ATM (banking machines in general G07F 19/00)}
G06K 7/10425	. . . . .	{ the interrogation device being arranged for interrogation of record carriers passing by the interrogation device}
G06K 7/10435	. . . . . .	{ the interrogation device being positioned close to a conveyor belt or the like on which moving record carriers are passing (conveying in accordance with bodily destination marks, see B65G 47/46, sorting of objects carrying identity markings, see B07C 5/34)}
G06K 7/10445	. . . .	{ the record carriers being fixed to further objects, e.g. RFIDs fixed to packages, luggage, mail-pieces or work-pieces transported on a conveyor belt}
G06K 7/10455	. . . .	{ the record carriers being fixed to an endless tape or at least not fixed to further objects}
G06K 7/10465	. . . .	{ the interrogation device being capable of self-diagnosis, e.g. in addition to or as part of the actual interrogation process (testing of electrical circuits in general G01R 31/28)}
G06K 7/10475	. . . .	{ arrangements to facilitate interaction with further interrogation devices, e.g. such that at least two interrogation devices may function and cooperate in a network of such devices}
G06K 7/10544	. .	{ by scanning of the records by radiation in the optical part of the electromagnetic spectrum}
G06K 7/10554	. . .	{Moving beam scanning}
G06K 7/10564	. . . .	{Light sources}
G06K 7/10574	. . . . .	{Multiple sources}
G06K 7/10584	. . . . .	{Source control}
G06K 7/10594	. . . .	{Beam path}
G06K 7/10603	. . . . .	{Basic scanning using moving elements}
G06K 7/10613	. . . . . .	{by rotation, e.g. polygon}
G06K 7/10623	. . . .	{Constructional details}
G06K 7/10633	. . . . . .	{by oscillation}
G06K 7/10643	. . . .	{Activating means}
G06K 7/10653	. . . .	{using flexible or piezoelectric means}
G06K 7/10663	. . . . . .	{using hologram}
G06K 7/10673	. . . . . .	{Parallel lines}
G06K 7/10683	. . . . .	{Arrangement of fixed elements}
G06K 7/10693	. . . . . .	{for omnidirectional scanning}
G06K 7/10702	. . . . . .	{ Particularities of propagating elements, e.g. lenses, mirrors (**G06K 7/10B** takes precedence)}
G06K 7/10712	. . .	{Fixed beam scanning}
G06K 7/10722	. . . .	{Photodetector array or CCD scanning}
G06K 7/10732	. . . . .	{Light sources}
G06K 7/10742	. . . . .	{ including a diffuser for diffusing the light from the light source to create substantially uniform illumination of the target record carrier}
G06K 7/10752	. . . . .	{ Exposure time control}
G06K 7/10762	. . . .	{Relative movement}
G06K 7/10772	. . . . .	{Moved readers, e.g. pen, wand}

G06K 7/10782	. . . . .	{Slot readers}
G06K 7/10792	. . .	{Special measures in relation to the object to be scanned}
G06K 7/10801	. . . .	{Multidistance reading}
G06K 7/10811	. . . . .	{Focalisation}
G06K 7/10821	. . .	{ further details of bar or optical code scanning devices}
G06K 7/10831	. . . .	{ Arrangement of optical elements, e.g. lenses, mirrors, prisms (optical elements per se G02B)}
G06K 7/10841	. . . .	{ Particularities of the light-sensitive elements (semiconductor devices H01L)}
G06K 7/10851	. . . .	{ Circuits for pulse shaping, amplifying, eliminating noise signals, checking the function of the sensing device (basic electronic circuitry H03)}
G06K 7/10861	. . . .	{ sensing of data fields affixed to objects or articles, e.g. coded labels (postal sorting B07C 3/14, conveying articles B65G 47/48)}
G06K 7/10871	. . . . .	{ randomly oriented data-fields, code-marks therefore, e.g. concentric circles-code}
G06K 7/10881	. . . .	{ constructional details of hand-held scanners}
G06K 7/10891	. . . . .	{ the scanner to be worn on a finger or on a wrist}
G06K 7/109	. . . . .	{ adaptations to make the hand-held scanner useable as a fixed scanner}
G06K 7/1091	. . . . .	{ means to wake up the scanner from a sleep mode, e.g. using an acceleration sensor indicating that the scanner is being picked up by a user}
G06K 7/1092	. . . .	{ sensing by means of TV-scanning}
G06K 7/1093	. . . .	{ sensing, after transfer of the image of the data-field to an intermediate store, e.g. storage with cathode ray tube}
G06K 7/1094	. . . .	{ the record carrier being at least partially of the hologram type}
G06K 7/1095	. . . .	{ the scanner comprising adaptations for scanning a record carrier that is displayed on a display-screen or the like}
G06K 7/1096	. . . .	{ the scanner having more than one scanning window, e.g. two substantially orthogonally placed scanning windows for integration into a check-out counter of a super-market}
G06K 7/1097	. . . .	{ Optical sensing of electronic memory record carriers, such as interrogation of RFIDs with an additional optical interface}
G06K 7/1098	. . . .	{ the scanning arrangement having a modular construction}
G06K 7/1099	. .	{ scanning using X-rays}
G06K 7/12	. .	using a selected wavelength, e.g. to sense red marks and ignore blue marks
G06K 7/14	. .	using light without selection of wavelength, e.g. sensing reflected white light {(G06K 7/10831 to G06K 7/1097 take precedence)}
G06K 7/1404	. . .	{ Methods for optical code recognition}
G06K 7/1408	. . . .	{ the method being specifically adapted for the type of code}
G06K 7/1413	. . . . .	{ 1D bar codes}
G06K 7/1417	. . . . .	{ 2D bar codes}
G06K 7/1421	. . . . .	{ Circular bar codes}
G06K 7/1426	. . . . .	{ Multi-level bar codes}
G06K 7/143	. . . . .	{ Glyph-codes}
G06K 7/1434	. . . . .	{ Barcodes with supplemental or add-on codes}
G06K 7/1439	. . . .	{ including a method step for retrieval of the optical code}

G06K 7/1443	. . . . .	{ locating of the code in an image}
G06K 7/1447	. . . . .	{ extracting optical codes from image or text carrying said optical code}
G06K 7/1452	. . . . .	{ detecting bar code edges}
G06K 7/1456	. . . . .	{ determining the orientation of the optical code with respect to the reader and correcting therefore}
G06K 7/146	. . . .	{ the method including quality enhancement steps}
G06K 7/1465	. . . . .	{ using several successive scans of the optical code}
G06K 7/1469	. . . . .	{ using sub-pixel interpolation}
G06K 7/1473	. . . . .	{ error correction}
G06K 7/1478	. . . . .	{ adapting the threshold for pixels in a CMOS or CCD pixel sensor for black and white recognition}
G06K 7/1482	. . . . .	{ using fuzzy logic or natural solvers, such as neural networks, genetic algorithms and simulated annealing}
G06K 7/1486	. . . . .	{ Setting the threshold-width for bar codes to be decoded}
G06K 7/1491	. . . . .	{ the method including a reconstruction step, e.g. stitching two pieces of bar code together to derive the full bar code}
G06K 7/1495	. . . .	{ the method including an image compression step}

G06K 9/00 **Methods or arrangements for reading or recognising printed or written characters or for recognising patterns, e.g. fingerprints** (processing or analysis of tracks of nuclear particles G01T 5/02; { information retrieval G06F 17/30; medical diagnosis **G06F 19/00A2**; recognition of molecular sequences **G06F 19/00C**; radio frequency identification G06K 7/00; recognition of barcodes and similar code images G06K 7/10; computer systems based on specific computational models G06N; image analysis, inspection, positioning or tracking G06T 7/00; recognition of acoustic speech signals G10L 15/00; acoustic speaker identification G10L 17/00})

NOTE

1. In this group, the following term is used with the meaning indicated:
- "recognising" includes several functions such as extracting features, clustering, classifying or matching.
2. IPC subgroups G06K 9/20, G06K 9/36, G06K 9/62 and G06K 9/74 refer to methods or arrangements that can be applied to a pattern independently of its nature or to that are applied to specific patterns not included in the subgroups in the range G06K 9/00006 to G06K 9/00852. The CPC subgroups in the range G06K 9/00006 to G06K 9/00852 refer to the same methods or arrangements when applied or specially adapted to the specific patterns to which these subgroups relate.
3. The present group does not cover the use of recognised patterns in specific applications, e.g. the use of traced gestures recognised as commands to be input to a computer is covered by the groups under G06F 3/00

G06K 9/00006	.	{Acquiring or recognising fingerprints or palmprints (non-computerised biometric identification A61B 5; means for preventing unauthorised use of vehicles B60R 25/00; security in computer systems G06F 21/00; secure access to buildings G07C 9/00; secret or secure communication H04L 9/00; means for preventing unauthorised telephone calls H04M 1/667)}
G06K 9/00013	. .	{ Image acquisition (materials for developing fingerprints, means for visual identification A61B 5/1172)}
G06K 9/0002	. . .	{by non-optical methods, e.g. by ultrasonic or capacitive sensing}

G06K 9/00026	. . .	{by combining adjacent partial images (e.g. slices) to create a composite input or reference pattern; tracking a sweeping finger movement (for specific swipe sensing hardware the groups G06K 9/0002, G06K 9/00033, G06K 9/0004 and G06K 9/00046 take precedence)}
G06K 9/00033	. . .	{by direct reading, i.e. contactless acquisition}
G06K 9/0004	. . .	{by using electro-optical elements or layers, e.g. electroluminescent sensing}
G06K 9/00046	. . .	{by using geometrical optics, e.g. using prisms (G06K 9/00033 takes precedence)}
G06K 9/00053	. . .	{ Protecting the fingerprint sensor against damage caused by the finger (protecting semiconductor devices against mechanical damage in general **H01L 23/00M**; encapsulations of semiconductor devices H01L 23/28; protecting semiconductor devices against electrostatic discharges in general H01L 23/60, H01L 27/0248)}
G06K 9/00067	. .	{Preprocessing; Feature extraction (minutiae)}
G06K 9/00073	. . .	{ Extracting features related to minutiae and pores}
G06K 9/0008	. . .	{ Extracting features related to ridge properties; determining the fingerprint type, e.g. whorl, loop}
G06K 9/00087	. .	{Matching; Classification}
G06K 9/00093	. . .	{ Matching features related to minutiae and pores}
G06K 9/001	. . .	{ Matching features related to ridge properties or fingerprint texture}
G06K 9/00107	. .	{ Detecting the live character of the finger, i.e. distinguishing from a fake or cadaver finger (fingerprint spoof detection by analysing recognition results G06K 9/00087)}
G06K 9/00114	. . .	{ using image processing}
G06K 9/0012	. . .	{ using acquisition arrangements}
G06K 9/00127	.	{ Acquiring and recognising microscopic objects, e.g. biological cells and cellular parts (apparatus for measuring microbiological properties C12M 1/34; optical analysis of chemical or physical properties of particles, e.g. investigation of dimensions G01N 15/14; biomedical image inspection G06T 7/0012)}
G06K 9/00134	. .	{ Acquisition, e.g. centering the image field (fluorescence analysis G01N 21/64; scanning microscopes G02B 21/002; processing of multiple slides G02B 21/365)}
G06K 9/0014	. .	{ Pre-processing, e.g. image segmentation (segmentation for general image processing G06T 7/0079); Feature extraction}
G06K 9/00147	. .	{ Matching; Classification}
G06K 9/00154	.	{Reading or verifying signatures; Writer recognition}
G06K 9/00161	. .	{ based only on signature image, e.g. static signature recognition}
G06K 9/00167	. .	{ based only on signature signals such as velocity or pressure, e.g. dynamic signature recognition}
G06K 9/00174	. . .	{ Acquisition}
G06K 9/00181	. . .	{ Matching; classification}
G06K 9/00187	. . .	{ Preprocessing; feature extraction}
G06K 9/00194	. . . .	{ Sampling; contour coding; stroke extraction}
G06K 9/00201	.	{ Recognising three-dimensional objects, e.g. using range or tactile information (arrangements for measuring depth G01B 11/22, for measuring curvatures G01B 11/24; processing image data for depth or shape recovery G06T 7/0051; registration of range data G06T 7/0024)}
G06K 9/00208	. .	{by matching two-dimensional images to three-dimensional objects}

G06K 9/00214	. .	{ by matching three-dimensional models, e.g. conformal mapping of Riemann surfaces}
G06K 9/00221	.	{Acquiring or recognising human faces, facial parts, facial sketches, facial expressions}
G06K 9/00228	. .	{Detection; Localisation; Normalisation}
G06K 9/00234	. . .	{ using pixel segmentation or colour matching (segmentation for general image processing G06T 7/0079; colour analysis G06T 7/408)}
G06K 9/00241	. . .	{using holistic features (extraction or representation of holistic features per se G06K 9/00275)}
G06K 9/00248	. . .	{using facial parts and geometric relationships (extraction or representation of facial parts per se G06K 9/00281)}
G06K 9/00255	. . .	{ using acquisition arrangements}
G06K 9/00261	. . .	{ using comparisons between temporally consecutive images (face tracking G06T 7/20)}
G06K 9/00268	. .	{Feature extraction; Face representation}
G06K 9/00275	. . .	{Holistic features and representations, i.e. based on the facial image taken as a whole (statistical feature extraction in general G06K 9/6232; matching eigenfaces G06K 9/00288)}
G06K 9/00281	. . .	{Local features and components; Facial parts (iris recognition G06K 9/00597); Occluding parts, e.g. glasses; Geometrical relationships}
G06K 9/00288	. .	{Classification, e.g. identification}
G06K 9/00295	. . .	{ of unknown faces, i.e. recognising the same non-enrolled faces, e.g. recognising the unknown faces across different face tracks (tracking in general G06T 7/20; detecting affinities between people using analysis of image collections G06K 9/00677)}
G06K 9/00302	. .	{ Facial expression recognition}
G06K 9/00308	. . .	{ Static expression}
G06K 9/00315	. . .	{ Dynamic expression}
G06K 9/00335	.	{Recognising movements or behaviour, e.g. recognition of gestures, dynamic facial expressions; Lip-reading (using movements or postures of body parts for inputting data to a computer G06F 3; static facial expressions G06K 9/00221; recognition of scene events G06K 9/00624; analysis of movement G06T 7/20; lip-reading assisted speech recognition G10L 15/24)}
G06K 9/00342	. .	{ Recognition of whole body movements, e.g. for sport training}
G06K 9/00348	. . .	{ Recognition of walking or running movements, e.g. gait recognition}
G06K 9/00355	. .	{ Recognition of hand or arm movements, e.g. recognition of deaf sign language (static hand posture recognition G06K 9/00375)}
G06K 9/00362	.	{Recognising human body or animal bodies, e.g. vehicle occupant, pedestrian; Recognising body parts, e.g. hand (passenger detection systems B60N 2/002; handprints G06K 9/00006; face and facial components G06K 9/00221; eyes G06K 9/00597; determining position of passenger G06T 7/004)}
G06K 9/00369	. .	{ Recognition of whole body, e.g. static pedestrian or occupant recognition (G06K 9/00342 takes precedence)}
G06K 9/00375	. .	{ Recognition of hand or arm, e.g. static hand biometric or posture recognition (G06K 9/00355 takes precedence; palmprint and fingerprint recognition G06K 9/00006)}
G06K 9/00382	. . .	{ Static hand biometric or posture recognition}

G06K 9/00389   . . .   { Static hand gesture recognition}

G06K 9/00402   .   { Recognising digital ink, i.e. recognising temporal sequences of handwritten position coordinates (G06K 9/00154 takes precedence; interaction arrangements using gestures traced on a digitiser **G06F 3/048A3G**; acquisition of digital ink as far as essentially related to recognition G06K 9/222)}

G06K 9/00409   . .   { Preprocessing; Feature extraction}

G06K 9/00416   . . .   { Sampling; contour coding; stroke extraction}

G06K 9/00422   . .   { Matching; classification}

G06K 9/00429   . . .   { using a special pattern or subpattern alphabet}

G06K 9/00436   . . .   { using human interaction, e.g. selection of the best displayed recognition candidate}

G06K 9/00442   .   { Document analysis and understanding; Document recognition}

G06K 9/00449   . .   { Layout structured with printed lines or input boxes, e.g. business forms, tables (tables without printed lines or boxes G06K 9/00463; identification of document type using identifier or marker G06K 9/2054)}

G06K 9/00456   . .   { Classification of image contents, e.g. text, photographs, tables (discrimination based on image tones H04N 1/40062)}

G06K 9/00463   . .   { Document analysis by extracting the geometrical structure, e.g. layout tree; Block segmentation, e.g. bounding boxes for graphics, paragraphs, words or letters}

G06K 9/00469   . .   { Document understanding by extracting the logical structure, e.g. chapters, sections, columns, titles, paragraphs, captions, page number, and identifying its elements, e.g. author, keywords, ZIP code, money amount}

G06K 9/00476   . .   { Reading or recognising technical drawings or geographical maps}

G06K 9/00483   . .   { Document matching}

G06K 9/00496   .   {Recognising patterns in signals and combinations thereof (signature verification G06K 9/00154; analysing specific medical signals, e.g. bioelectric signals, blood pressure A61B 5; processing radar and similar signals G01S; analysis of chromatographic signals G01N 30/86; processing seismic signals G01V 1/28, G01V 1/46; acoustic speech processing G10L; transmission systems H04B 1/00)}

WARNING

not complete, see **G06F 17/00D**

G06K 9/00503   . .   {Preprocessing, e.g. filtering (electrical circuits for filtering H03H; adaptive filters H03H 21; convolution-based filters H03H 17, H03H 21)}

G06K 9/0051   . . .   { Denoising}

G06K 9/00516   . . . .   { by applying a scale-space analysis, e.g. using wavelet analysis}

G06K 9/00523   . .   {Feature extraction (arrangements for measuring frequencies and for spectral analysis G01R 23/16; algorithms for spectral analysis, digital electric mathematical transforms per se G06F 17/14)}

G06K 9/0053   . . .   { by analysing the shape of a waveform, e.g. extracting parameters relating to peaks}

G06K 9/00536   . .   {Classification; Matching (digital electric correlation G06F 17/15; electronic classification and matching per se G06K 9/62)}

G06K 9/00543   . . .   { by matching peak patterns}

G06K 9/0055   . . .   { by matching signal segments}

G06K 9/00557	. . . .	{ by plotting the signal segments against each other, e.g. analysing scattergrams}
G06K 9/00563	. . . .	{ by applying autoregressive analysis}
G06K 9/0057	. .	{ Source localisation; Inverse modelling (electroencephalography **A61B 5/476**; source separation G06K 9/624; image reconstruction from projection, e.g. tomography G06T 11/003; beam formers in general G10K 11/34; radio transmission systems for beam forming H04B 7/04)}
G06K 9/00577	.	{ Recognising objects characterised by unique random properties, i.e. objects having a physically unclonable function [PUF], e.g. authenticating objects based on their unclonable texture (verifying genuineness of valuable papers G07D 7/00)}
G06K 9/00597	.	{Acquiring or recognising eyes, e.g. iris verification}
G06K 9/00604	. .	{Acquisition}
G06K 9/0061	. .	{ Preprocessing; Feature extraction}
G06K 9/00617	. .	{ Matching; Classification}
G06K 9/00624	.	{ Recognising scenes, i.e. recognition of a whole field of perception; recognising scene-specific objects (image retrieval G06F 17/30244; video retrieval G06F 17/30781; image analysis and image segmentation, e.g. pixel labelling G06T 7/00; alarm systems G08B; traffic control G08G; pictorial communication H04N)}
G06K 9/0063	. .	{ Recognising patterns in remote scenes, e.g. aerial images, vegetation versus urban areas (radar and similar technologies G01S; segmentation for general image processing G06T 7/0079)}
G06K 9/00637	. . .	{ of urban or other man made structures}
G06K 9/00651	. . .	{ of network patterns, such as roads, rivers}
G06K 9/00657	. . .	{ of vegetation}
G06K 9/00664	. .	{ Recognising scenes such as could be captured by a camera operated by a pedestrian or robot, including objects at substantially different ranges from the camera}
G06K 9/00671	. . .	{ for providing information about objects in the scene to a user, e.g. as in augmented reality applications}
G06K 9/00677	. . .	{ Analysis of image collections based on shared content, e.g. to detect affinity between persons}
G06K 9/00684	. . .	{ Categorising the entire scene, e.g. birthday party or wedding scene}
G06K 9/00691	. . . .	{ Indoor scenes}
G06K 9/00697	. . . .	{ Outdoor scenes}
G06K 9/00704	. . . . .	{ Urban scenes}
G06K 9/00711	. .	{ Recognising video content, e.g. extracting audiovisual features from movies, extracting representative key-frames, discriminating news vs. sport content (information retrieval in video databases G06F 17/30781; recognition of movements or behaviour G06K 9/00335; extracting overlay text **G06K 9/32R1T2**; fusion techniques G06K 9/6288; speech recognition G10L15; indexing of audio and video or audiovisual data on record media using extracted features or characteristics G11B 27/28)}
G06K 9/00718	. . .	{ Higher-level, semantic clustering, classification or understanding of video scenes, e.g. detection, labelling or Markovian modelling of sport events or news items (segmenting video sequences G06K 9/00765; clustering techniques per se G06K 9/6218; classification techniques per se G06K 9/6267)}
G06K 9/00724	. . . .	{ of sport video content (determination of trajectories G06T 7/20)}

G06K 9/00731	. . . .	{ of news video content}
G06K 9/00744	. . .	{ Extracting features from the video content, e.g. video "fingerprints", or characteristics, e.g. by automatic extraction of representative shots or key frames (segmentation for general image processing G06T 7/0079; use of extracted content features in video information retrieval G06F 17/30784; automated annotation of image based on image contents G06K 9/00671; determination of region of interest for recognition G06K 9/3233; extraction of image features or characteristics G06K 9/46, determining representative patterns G06K 9/6255)}
G06K 9/00751	. . . .	{ Detecting suitable features for summarising video content (presentation in the form of a video summary G06F 17/30843; editing video summary G11B 27/034; programmed access to video content G11B 27/105)}
G06K 9/00758	. . .	{ Matching video sequences (aligning the image field G06K 9/32; image matching techniques G06K 9/00201, G06K 9/62; registration of image sequences G06T 7/0038)}
G06K 9/00765	. . .	{ Segmenting video sequences, i.e. computational techniques such as parsing or cutting the sequence, low-level clustering or determining units such as shots and scenes (segmentation of touching or overlapping patterns in the image field G06K 9/34; segmentation for general image processing G06T 7/0079; segmentation of an image based on motion information G06T 7/2006; picture signal circuitry for scene change detection H04N 5/147)}
G06K 9/00771	. .	{ Recognising scenes under surveillance, e.g. with Markovian modelling of scene activity (G06K 9/00785 takes precedence; recognition of movements or behaviour G06K 9/00335; motion analysis using general image processing G06T 7/20; intruder alarms using image scanning and comparing systems G08B 13/194C; circuitry for movement detection and estimation for pictorial communication H04N 5/144; closed circuit television systems H04N 7/18)}
G06K 9/00778	. . .	{ Recognition or static of dynamic crowd images, e.g. recognition of crowd congestion (recognition of individual pedestrians G06K 9/00369, recognition of whole body movements G06K 9/00342; counting mechanisms G06M; analysis of motion G06T 7/20; individual entry or exit registers G07C 9/00)}
G06K 9/00785	. .	{ Recognising traffic patterns acquired by static cameras (measuring or analysing of parameters relative to traffic conditions G08G 1/0104; analysing traffic situation by means of optical sensors G08G 1/04)}
G06K 9/00791	. .	{ Recognising scenes perceived from the perspective of a land vehicle, e.g. recognising lanes, obstacles or traffic signs on road scenes (vehicle signalling devices B60Q 1/48B, B60Q 1/525; viewing systems for vehicles being directed to the improvement of the driver's vision B60R 1/00; means for informing the driver B60W 50/08K; steering aid displays B62D 15/02; control of position of land vehicles using camera and image processing G05D 1/0246; traffic control for road vehicles, e.g. involving several vehicles or traffic rules G08G 1/00)}
G06K 9/00798	. . .	{ Recognition of lanes or road borders, e.g. of lane markings, or recognition of driver's driving pattern in relation to lanes perceived from the vehicle; Analysis of car trajectory relative to detected road (determination of trajectories G06T 7/20)}
G06K 9/00805	. . .	{ Detecting potential obstacles (recognising people G06K 9/00362)}
G06K 9/00812	. . .	{ Recognition of available parking space}
G06K 9/00818	. . .	{ Recognising traffic signs}
G06K 9/00825	. . .	{ Recognition of vehicle or traffic lights}
G06K 9/00832	. .	{ Recognising scenes inside a vehicle, e.g. related to occupancy, driver state, inner lighting conditions}
G06K 9/00838	. . .	{ Recognising seat occupancy, e.g. forward or rearward facing child seat}

G06K 9/00845	. . .	{ Recognising the driver's state or behaviour, e.g. attention, drowsiness (anti-dozing alarms G08B 21/06; safety device responsive to condition of driver B60K 28/02; psychotechnic devices for vehicle drivers A61B 5/18)}
G06K 9/00852	.	{Recognising whole cursive words}
G06K 9/00859	. .	{using word shape}
G06K 9/00865	. .	{using stroke segmentation}
G06K 9/00872	. . .	{with lexical matching}
G06K 9/00879	. . .	{with probabilistic networks, e.g. hidden Markov models}
G06K 9/00885	.	{ Biometric patterns not provided for under G06K 9/00006, G06K 9/00154, G06K 9/00335 , G06K 9/00362 , G06K 9/00597; Biometric specific functions not specific to the kind of biometric}
G06K 9/00892	. .	{ Use of multiple biometrics (sensor fusion G06K 9/6289)}
G06K 9/00899	. .	{ Spoof detection (G06K 9/00107 takes precedence)}
G06K 9/00906	. . .	{ Detection of body part being alive}
G06K 9/00912	. .	{ Interactive means for assisting the user in correctly positioning the object of interest}
G06K 9/00919	. .	{ Static means for assisting the user in correctly positioning the object of interest}
G06K 9/00926	. .	{ Maintenance of references; Enrolment}
G06K 9/00973	.	{Hardware and software architectures for pattern recognition, e.g. modular organisation}
G06K 9/00979	. .	{structured as a network}
G06K 9/00986	. .	{using specific electronic processors}
G06K 9/00993	.	{Management of recognition tasks}
G06K 9/03	.	Detection or correction of errors, e.g. by rescanning the pattern {(validation or performance evaluation G06K 9/6261)}
G06K 9/033	. .	{with the intervention of an operator}
G06K 9/036	. .	{ Evaluation of quality of acquired pattern}
G06K 9/18	.	using printed characters having additional code marks or containing code marks, e.g. the character being composed of individual strokes of different shape, each representing a different code value
G06K 9/183	. .	{Characters composed of bars, e.g. CMC-7 (bar code forming unreadable characters, e.g. UPC, G06K 7/00)}
G06K 9/186	. .	{ Recognition of characters printed with magnetic ink (G06K 9/183 takes precedence)}
G06K 9/20	.	Image acquisition
G06K 9/2009	. .	{Construction of image pick-up using regular bi-dimensional dissection}
G06K 9/2018	. .	{Identifying/ignoring parts by sensing at different wavelengths}
G06K 9/2027	. .	{ Illumination control}
G06K 9/2036	. .	{Special illumination such as grating, reflections, deflections, e.g. for characters with relief}
G06K 9/2054	. .	{ Selective acquisition/locating/processing of specific regions, e.g. highlighted text,

fiducial marks, predetermined fields, document type identification (G06K 9/2018, G06K 9/209 take precedence; recognising the document type with the paragraph layout G06K 9/00442; recognising the document type with the layout of printed lines or input boxes G06K 9/00449)}

G06K 9/2063	. . .	{ based on a marking or identifier characterising the document or the area (markings for centering the field of view on the document G06K 9/3216)}
G06K 9/2072	. . .	{ based on positionally close symbols, e.g. amount sign or URL-specific characters (recognition with lexical or semantic contextt G06K 9/72)}
G06K 9/2081	. . .	{ based on user interaction}
G06K 9/209	. .	{Sensor details, e.g. position, configuration, special lenses (G06K 9/2018 takes precedence)}
G06K 9/22	. .	using hand-held instruments
G06K 9/222	. . .	{ the instrument generating sequences of position coordinates corresponding to handwriting; preprocessing or recognising digital ink (pen or stylus type devices inputting position **G06F 3/033P2**, light pens **G06F 3/033P3**; interaction arrangements using gestures traced on a digitiser **G06F 3/048A3G**)}
G06K 9/224	. . . .	{ in three dimensions}
G06K 9/228	. . .	{Hand-held scanners; Optical wands}
G06K 9/24	. . .	Construction of the instrument
G06K 9/26	. .	using a slot moved over the image
G06K 9/28	. .	using discrete sensing elements at predetermined points
G06K 9/30	. .	using automatic curve following means
G06K 9/32	. .	Aligning or centering of the image pick-up or image-field
G06K 9/3208	. . .	{Orientation detection or correction, e.g. rotation of multiples of 90 degrees}
G06K 9/3216	. . .	{ by locating a pattern (G06K 9/3208, G06K 9/3275 take precedence; centering within a document with a marking G06K 9/2063)}
G06K 9/3233	. . .	{ Determination of region of interest (segmentation for general image processing G06T 7/0079)}
G06K 9/3241	. . . .	Recognising objects as potential recognition candidates based on visual cues, e.g. shape
G06K 9/325	. . . .	{ Detection of text region in scene imagery, real life image or Web pages, e.g. licenses plates, captions on TV images}
G06K 9/3258	. . . . .	{ Scene text, e.g. street name}
G06K 9/3266	. . . . .	{ Overlay text, e.g. embedded caption in TV program}
G06K 9/3275	. . .	{ Inclination (skew) detection or correction of characters or of image to be recognised (determining orientation of objects in general G06T 7/004)}
G06K 9/3283	. . . .	{ of characters or characters lines}
G06K 9/34	. .	Segmentation of touching or overlapping patterns in the image field {(segmentation by quantisation, e.g. thresholding, G06K 9/38; edge detection for image feature extraction G06K 9/4604; extraction of connected components or edge linking G06K 9/4638; segmentation or edge detection for general image processing G06T 7/0079)}
G06K 9/342	. . .	{ Cutting or merging image elements, e.g. region growing, watershed, clustering-based techniques (smoothing or thinning of patterns G06K 9/44; clustering techniques G06K 9/6218; region-based segmentation for general image processing G06T 7/0081)}
G06K 9/344	. . .	{using recognition of characters or words (lexical postprocessing of segmented characters G06K 9/72)}

G06K 9/346	. . .	{ Removing patterns interfering with the pattern to be recognised, such as ruled lines, underlines (extracting table structures G06K 9/00442; document recognition G06K 9/2054)}
G06K 9/348	. . .	{using character size, text spacings, pitch estimation}
G06K 9/36	.	Image preprocessing, i.e. processing the image information without deciding about the identity of the image (image data processing or generation, in general G06T)

NOTE

Group G06K 9/58 takes precedence over groups G06K 9/38 to G06K 9/54

G06K 9/38	. .	Quantising the analogue image signal { e.g. histogram thresholding for discrimination between background and foreground patterns (region-based segmentation of touching or overlapping patterns G06K 9/342; image segmentation for general image processing G06T 7/0081)}
G06K 9/40	. .	Noise filtering {(restoration for general image processing G06T 5/001; morphologic operations for general image enhancement G06T 5/30)}
G06K 9/42	. .	Normalisation of the pattern dimensions
G06K 9/44	. .	Smoothing or thinning of the pattern {(restoration for general image processing G06T 5/001; morphologic operations for general image enhancement G06T 5/30)}
G06K 9/46	. .	Extraction of features or characteristics of the image {(segmentation of touching or overlapping patterns G06K 9/34; edge detection for feature extraction G06K 9/4604; segmentation or edge detection for general image processing G06T 7/0079)}
G06K 9/4604	. . .	{ Detecting partial patterns, e.g. edges or contours, or configurations, e.g. loops, corners, strokes, intersections (extracting features by contour coding G06K 9/48; edge-based segmentation for general image processing G06T 7/0083; edge detection for general image processing G06T 7/0085)}
G06K 9/4609	. . . .	{by matching or filtering}
G06K 9/4614	. . . . .	{ filtering with Haar-like subimages, e.g. computation thereof with the integral image technique (biologically-inspired filters such as Gabor wavelets or local ICA kernels G06K 9/4619; local approaches in face detection or representation G06K 9/00248, G006K9/00F2L)}
G06K 9/4619	. . . . .	{ Biologically-inspired filters, e.g. receptive fields}
G06K 9/4623	. . . . . .	{ with interaction between the responses of different filters}
G06K 9/4628	. . . .	{ Integrating the filters into a hierarchical structure}
G06K 9/4633	. . . .	{by mapping characteristic values of the pattern into a parameter space, e.g. Hough transformation}
G06K 9/4638	. . . .	{ by analysing connectivity relationships of elements of the pattern, e.g. by edge linking, by connected component or neighbouring slice analysis, by Markov Random Field [MRF} analysis (segmentation of touching or overlapping patterns involving probabilistic approaches G06K 9/34; MRF and other Markovian models in general G06K 9/6296; computing shortest geodesic path G06K 9/62M; segmentation involving probabilistic approaches for general image processing G06T 7/0087)]
G06K 9/4642	. . .	{ by performing operations within image blocks or by using histograms (G06K 9/4652 and G06K 9/4671 take precedence; matching image histograms G06K 9/64S)}
G06K 9/4647	. . . .	{summing image-intensity values; Projection and histogram analysis (intersections with "scanning" patterns G06K 9/50; G06K 9/4652 takes precedence)}

G06K 9/4652	. . .	{ related to colour (G06K 9/4671 takes precedence; colour-based face detection G06K 9/00234; colour analysis in general G06T 7/408; region-based segmentation for general image processing G06T 7/0081; colour conversion and processing H04N 1/46; coding colour pictures signals using a reduced set of representative colours H04N 1/644)}
G06K 9/4661	. . .	{ related to illumination properties, e.g. according to a reflectance or lighting model (depth from shading G06T 7/0053; image rendering with lighting effects G06T 15/50)}
G06K 9/4671	. . .	{ Extracting features based on salient regional features, e.g. Scale Invariant Feature Transform [SIFT] keypoints (determination of region of interest for recognition [ROI] G06K 9/3233; extraction of specific shape primitives, e.g. corner or loop, or of configurations thereof, G06K 9/4604; biologically-inspired systems integrating saliency maps, e.g. for modelling visual attention G06K 9/4628; global invariant features G06K 9/52)}
G06K 9/4676	. . . .	{ Extracting features based on a plurality of salient regional features, e.g. "bag of words" (saliency map with interactions such as reinforcement or inhibition G06K 9/4623)}
G06K 9/468	. . .	{ related to a structural representation of the pattern}
G06K 9/4685	. . . .	{ Syntactic representation, e.g. using a grammatical approach (syntactic pattern recognition G06K 9/6878)}
G06K 9/469	. . . .	{ Graphical representation, e.g. directed attributed graph (graph matching G06K 9/6892)}
G06K 9/48	. . .	by coding the contour of the pattern {contour related features or features from contour like patterns, e.g. hand-drawn point-sequence}
G06K 9/481	. . . .	{using vector-coding}
G06K 9/482	. . . .	{analysing the spectrum of the contour, e.g. Fourier expansion}
G06K 9/50	. . .	by analysing segments intersecting the pattern {segments obtained by the intersection of the pattern with a scanning pattern, e.g. random scanning, circular scanning (G06K 9/4638 takes precedence)}
G06K 9/52	. . .	by deriving mathematical or geometrical properties from the whole image
G06K 9/522	. . . .	{Frequency domain transformation; Autocorrelation}
G06K 9/525	. . . .	{ Computation of moments (moments not relevant for pattern recognition G06T 7/606)}
G06K 9/527	. . . .	{ Scale-space domain transformation, e.g. with wavelet analysis (wavelet transform as such G06F 17/148; compression of images with wavelet transform H04N 7/26)}
G06K 9/54	. .	Combinations of preprocessing functions
G06K 9/56	. . .	using a local operator, i.e. means to operate on an elementary image point in terms of the immediate surroundings of this point {(local operators for general image enhancement G06T 5/20)}
G06K 9/58	. .	using optical means
G06K 9/60	.	Combination of image acquisition and preprocessing functions
G06K 9/605	. .	{ the combination being locally implemented within the sensing arrangement, e.g. artificial retina (receptive fields G06K 9/4619; enhancement in image sensors H04N 3/15, H04N 5/217, H04N 5/232, H04N 5/235)}
G06K 9/62	.	Methods or arrangements for recognition using electronic means (learning machines G06F 15/18; digital correlation G06F 17/15; analogue correlation G06G 7/19)
G06K 9/6201	. .	{ Matching; Proximity measures}

G06K 9/6202	. . .	{ Comparing pixel values or logical combinations thereof, or feature values having positional relevance, e.g. template matching (specially adapted for image alignment G06T 7/0024; specially adapted for position determination G06T 7/004; specially adapted for the calculation of depth from stereo images G06T 7/0051, specially adapted for image segmentation G06T 7/0079; specially adapted for the analysis of motion G06T 7/20)}
G06K 9/6203	. . . .	{ Shifting or otherwise transforming the patterns to accommodate for positional errors}
G06K 9/6204	. . . . .	{ Matching of contours (G06K 9/6206, G06K 9/6211 take precedence)}
G06K 9/6205	. . . . . .	{ by mapping curve parameters onto an accumulator array, e.g. generalised Hough Transform (detecting primitive shapes such as lines and circles by accumulating parameters of a known equation G06K 9/4633)}
G06K 9/6206	. . . . .	{ involving a deformation of the sample or reference pattern; Elastic matching (segmentation of touching or overlapping patterns involving deformable models G06K 9/34; segmentation involving deformable models for general image processing G06T 7/0089)}
G06K 9/6207	. . . . . .	{ based on a local optimisation criterion, e.g. "snakes", i.e. active contour models of the pattern to be recognised}
G06K 9/6209	. . . . . .	{ based on shape statistics, e.g. active shape models of the pattern to be recognised}
G06K 9/621	. . . .	{ based also on statistics of image patches, e.g. active appearance models of the pattern to be recognised}
G06K 9/6211	. . . . .	{ Matching configurations of points or features, e.g. constellation matching (G06K 9/00087 takes precedence)}
G06K 9/6212	. . .	{ Comparing statistics of pixel or of feature values, e.g. histogram matching}
G06K 9/6214	. . .	{ based on a parametric eigenspace representation, e.g. eigenspace representation using pose or illumination parameters; Shape manifold}
G06K 9/6215	. . .	{ Proximity measures, i.e. similarity or distance measures}
G06K 9/6217	. .	{ Design or setup of recognition systems and techniques; Extraction of features in feature space; Clustering techniques; Blind source separation (regression analysis G06F 17/18)}
G06K 9/6218	. . .	{Clustering techniques}
G06K 9/6219	. . . .	{ Hierarchical techniques, i.e. dividing or merging pattern sets so as to obtain a dendogram}
G06K 9/622	. . . .	{ Non-hierarchical partitioning techniques}
G06K 9/6221	. . . . .	{ based on statistics}
G06K 9/6222	. . . . . .	{ with an adaptive number of clusters, e.g. ISODATA technique}
G06K 9/6223	. . . . . .	{ with a fixed number of clusters, e.g. K-means clustering}
G06K 9/6224	. . . . .	{ based on graph theory, e.g. Minimum Spanning Trees [MST], graph cuts, spectral clustering techniques (segmentation of touching or overlapping patterns involving graph-based approaches G06K 9/342; graph embedding G06K 9/6252; segmentation involving graph-based approaches for general image processing G06T 7/0093)]
G06K 9/6226	. . . . .	{based on the modelling of probability density functions}
G06K 9/6227	. . .	{ Selection of pattern recognition techniques, e.g. of classifiers in a multi-classifier system}
G06K 9/6228	. . .	{Selecting the most significant subset of features (G06K 9/6232 takes precedence)}

G06K 9/6229	. . . .	{ by using evolutionary computational techniques, e.g. genetic algorithms (genetic algorithms per se G06N 3/126)}
G06K 9/623	. . . .	{ by ranking or filtering the set of features, e.g. using a measure of variance or of feature cross-correlation}
G06K 9/6231	. . . .	{ by evaluating different subsets according to an optimisation criteria such as class separability, e.g. forward selection, backward elimination (linear discriminant analysis G06K 9/6234)}
G06K 9/6232	. . .	{Extracting features by transforming the feature space, e.g. multidimensional scaling; Mappings, e.g. subspace methods}
G06K 9/6234	. . . .	{based on a discrimination criterion, e.g. discriminant analysis (discriminant functions G06K 9/6227)}
G06K 9/6235	. . . . .	{ Rendering the within-class scatter matrix nonsingular}
G06K 9/6239	. . . .	{ based on a naturality criterion, e.g. with non-negative factorisation or negative correlation (matrix computation G06F 17/16)}
G06K 9/624	. . . .	{ based on a separation criterion, e.g. independent component analysis}
G06K 9/6242	. . . . .	{ of statistical independence, i.e. minimising mutual information or maximising nongaussianity}
G06K 9/6243	. . . . .	{ of decorrelation or non-stationarity, e.g. minimising lagged cross-correlations}
G06K 9/6244	. . . . .	{ enforcing sparsity or involving a domain transformation}
G06K 9/6245	. . . . . .	{ characterised by a domain transformation}
G06K 9/6246	. . . . .	{ overcoming non-stationarity or permutations (using non-stationarity for separation G06K 9/6244)}
G06K 9/6247	. . . .	{based on an approximation criterion, e.g. principal component analysis}
G06K 9/6248	. . . . .	{ nonlinearly, e.g. embedding a manifold in a Euclidean space (principal curves G06K 9/6251)}
G06K 9/6249	. . . .	{ based on a sparsity criterion, e.g. with an overcomplete basis (specific for source separation G06K 9/6244; pictorial communication involving matching pursuit H04N 7/26989)}
G06K 9/6251	. . . .	{ based on a criterion of topology preservation, e.g. multidimensional scaling, self-organising maps}
G06K 9/6252	. . . . .	{ involving differential geometry, e.g. embedding of pattern manifold}
G06K 9/6253	. . .	{ User interactive design (**G06K 9/62B10F1** takes precedence); Environments; Tool boxes}
G06K 9/6254	. . . .	{ Interactive pattern learning with a human teacher}
G06K 9/6255	. . .	{Determining representative reference patterns, e.g. averaging or distorting patterns; Generating dictionaries, e.g. user dictionaries}
G06K 9/6256	. . .	{Obtaining sets of training patterns; Bootstrap methods, e.g. bagging, boosting }
G06K 9/6257	. . . .	{ characterised by the organisation or the structure of the process, e.g. boosting cascade (feature selection by floating search G06K 9/6231)}
G06K 9/6259	. . . .	[N: characterised by the incorporation of unlabelled data, e.g. multiple instance learning [MIL], semi-supervised techniques using expectation-maximisation [EM] or na?ve labelling (EM techniques G06K 9/6226; validation with "oracles" **G06K 9/62B10F1**)
G06K 9/626	. . .	{Selecting classification rules}
G06K 9/6261	. . .	{partitioning the feature space}
G06K 9/6262	. . .	{ Validation, performance evaluation or active pattern learning techniques}
G06K 9/6263	. . . .	{ based on the feedback of a supervisor (relevance feedback in information

retrieval G06F 17/30)}

G06K 9/6264	. . . . .	{ the supervisor being an automated "intelligent" module, e.g. "intelligent oracle"}
G06K 9/6265	. . . .	{ based on a specific statistical test}
G06K 9/6267	. .	{ Classification techniques}
G06K 9/6268	. . .	{ relating to the classification paradigm, e.g. parametric or non-parametric approaches}
G06K 9/6269	. . . .	{ based on the distance between the decision surface and training patterns lying on the boundary of the class cluster, e.g. support vector machines}
G06K 9/627	. . . .	{ based on distances between the pattern to be recognised and training or reference patterns}
G06K 9/6271	. . . . .	{ based on distances to prototypes}
G06K 9/6272	. . . . . .	{ based on distances to cluster centroïds}
G06K 9/6273	. . . .	{ Smoothing the distance, e.g. Radial Basis Function Networks}
G06K 9/6274	. . . . . .	{ based on distances to neighbourhood prototypes, e.g. Restricted Coulomb Energy Networks}
G06K 9/6276	. . . . .	{ based on distances to closest patterns, e.g. nearest neighbour classification}
G06K 9/6277	. . . .	{ based on a parametric (probabilistic) model, e.g. based on Neyman-Pearson lemma, likelihood ratio, Receiver Operating Characteristic (ROC) curve plotting a False Acceptance Rate (FAR) versus a False Reject Rate (FRR) (segmentation of touching or overlapping patterns involving probabilistic approaches G06K 9/34; image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields techniques, G06K 9/4638; segmentation involving probabilistic approaches for general image processing G06T 7/0087)}
G06K 9/6278	. . . . .	{ Bayesian classification}
G06K 9/6279	. . .	{ relating to the number of classes}
G06K 9/628	. . . .	{ Multiple classes (hierarchical organisation **G06K 9/62B8**)}
G06K 9/6281	. . . . .	{ Piecewise classification, i.e. whereby each classification requires several discriminant rules}
G06K 9/6282	. . . . . .	{ Tree-organised sequential classifiers}
G06K 9/6284	. . . .	{ Single class perspective, e.g. one-against-all classification; Novelty detection; Outlier detection}
G06K 9/6285	. . .	{ relating to the decision surface}
G06K 9/6286	. . . .	{ Linear, e.g. hyperplane}
G06K 9/6287	. . . .	{ Non-linear, e.g. polynomial classifier (G06K 9/6284 takes precedence; classifier with multiple radial basis functions G06K 9/6273)}
G06K 9/6288	. .	{ Fusion techniques, i.e. combining data from various sources, e.g. sensor fusion (bootstrap techniques, e.g. boosting G06K 9/6256; data unmixing G06K 9/624; image matching G06K 9/64; fusion of acoustic speaker inputs **G10L 17/00B8M**)}
G06K 9/6289	. . .	{ of input or preprocessed data (imaging spectrometers G01J 3/2823; image fusion in general and biomedical image fusion G06T 5/50; processing and conversion of colour signals H04N 1/46)}
G06K 9/629	. . .	{ of extracted features}
G06K 9/6292	. . .	{ of classification results, e.g. of classification results related to same input data (G06K 9/6256 takes precedence)}
G06K 9/6293	. . . .	{ of classification results relating to different input data, e.g. multimodal

recognition}

G06K 9/6296	. .	{Graphical models, e.g. Bayesian networks (probabilistic networks per se G06N 7/005)}
G06K 9/6297	. . .	{ Markov models and related models, e.g. semi-Markov models; Markov random fields; networks embedding Markov models (segmentation of touching or overlapping patterns involving probabilistic approaches G06K 9/34; image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields, G06K 9/4638; application of Markov models to acoustic speech recognition G10L 15/00; segmentation involving probabilistic approaches for general image processing G06T 7/0087)}
G06K 9/6298	. .	{ Statistical pre-processing, e.g. techniques for normalisation or restoring missing data}
G06K 9/64	. .	using simultaneous comparisons or correlations of the image signals with a plurality of references, e.g. resistor matrix
G06K 9/645	. . .	{ using a resistor matrix}
G06K 9/66	. . .	references adjustable by an adaptive method, e.g. learning
G06K 9/68	. .	using sequential comparisons of the image signals with a plurality of references {in which the sequence of the image signals or the references is relevant}, e.g. addressable memory
G06K 9/6807	. . .	{Dividing the references in groups prior to recognition, the recognition taking place in steps; Selecting relevant dictionaries}
G06K 9/6814	. . . .	{according to the graphical properties}
G06K 9/6821	. . . . .	{Alphabet recognition, e.g. Latin, Kanji, Katakana}
G06K 9/6828	. . . . .	{Font recognition}
G06K 9/6835	. . . . .	{Discrimination between machine-print, hand-print and cursive writing}
G06K 9/6842	. . . .	{according to the linguistic properties, e.g. English, German}
G06K 9/685	. . .	{Involving plural approaches, e.g. verification by template match; resolving confusion among similar patterns, e.g. O & Q (G06K 9/6807 takes precedence)}
G06K 9/6857	. . . .	[N: Coarse/fine approaches, e.g. resolution of ambiguities, multiscale approaches
G06K 9/6878	. . .	{Syntactic or structural pattern recognition, e.g. symbolic string recognition}
G06K 9/6885	. . . .	{ Syntactic analysis, e.g. using a grammatical approach (syntactic image representation G06K 9/4685)}
G06K 9/6892	. . . .	{ Graph matching (graphical image representation G06K 9/469)}
G06K 9/70	. . .	the selection of the next reference depending on the result of the preceding comparison {contains no documents}
G06K 9/72	. .	using context analysis based on the provisionally recognized identity of a number of successive patterns, e.g. a word
G06K 9/723	. . .	{Lexical context (G06K 9/00872 takes precedence)}
G06K 9/726	. . .	{Syntactic or semantic context, e.g. balancing}
G06K 9/74	.	Arrangements for recognition using optical reference masks (optical analogue correlation G06E 3/00; {(arrangements for optically extracting non-holistic features, e.g. optical wedge-ring detectors, G06K 9/58)})
G06K 9/741	. .	{ using frequency domain filters, e.g. Fourier masks implemented on spatial light modulators (spatial light modulators per se G02B 26/00, G02F)}
G06K 9/743	. . .	{ characterised by the kind of filter}
G06K 9/745	. . . .	{ the filter being related to phase processing, e.g. phase-only filters}

G06K 9/746	. . . .	{ the filter being related to the combination of filters, e.g. synthetic discriminant filters}
G06K 9/748	. .	{ using spatial domain filters, e.g. joint transform correlators}
G06K 9/76	. .	using holographic masks
G06K 9/78	.	Combination of image acquisition and recognition functions
G06K 9/80	.	Combination of image preprocessing and recognition functions
G06K 9/82	. .	using optical means in one or both functions

G06K 11/00   **Methods or arrangements for graph-reading or for converting the pattern of mechanical parameters, e.g. force or presence, into electrical signal** (combined with character or pattern recognition G06K 9/00; feelers for copying devices on machine tools B23Q 35/00; arrangements for measuring areas G01B; measuring force G01L; adapted as input devices to computers G06F 3/00; systems for transmitting the position of an object with respect to a predetermined reference system, e.g. tele-autographic system, G08C 21/00)

> **WARNING**
>
> This group and its subgroups are no longer used for the classification of new documents as from 1 January 2006. Documents relating to methods and arrangements for input to a computer are classified under G06F 3/033 and G06F 3/041

G06K 11/02	.	Automatic curve followers, {i.e. arrangements in which an exploring member or beam is forced to follow the curve}
G06K 11/04	. .	using an auxiliary scanning pattern
G06K 11/06	.	Devices for converting the position of a manually operated writing or tracing member into an electrical signal {(not used, see **G06F 3/033Z4**)}

G06K 13/00   **Conveying record carriers from one station to another, e.g. from stack to punching mechanism** (transport devices in general B65G; handling thin or filamentary material in general B65H)

G06K 13/02	.	the record carrier having longitudinal dimension comparable with transverse dimension, e.g. punched card
G06K 13/04	. .	Details, e.g. flaps in card-sorting apparatus
G06K 13/05	. . .	Capstans; Pinch rollers
G06K 13/06	. .	Guiding cards; Checking correct operation of card-conveying mechanisms
G06K 13/063	. . .	Aligning cards
G06K 13/067	. . .	Checking presence, absence, correct position, or moving status of cards
G06K 13/07	. .	Transporting of cards between stations
G06K 13/073	. . .	with continuous movement
G06K 13/077	. . .	with intermittent movement; Braking or stopping movement
G06K 13/08	. .	Feeding or discharging cards
G06K 13/0806	. . .	{ using an arrangement for ejection of an inserted card}

G06K 13/0812	. . . .	{ the ejection arrangement utilizing a push bar for manipulation by hand in order to eject the inserted card}
G06K 13/0818	. . . . .	{ the push bar comprising a pivotable push button}
G06K 13/0825	. . . .	{ the ejection arrangement being of the push-push kind}
G06K 13/0831	. . . .	{ the ejection arrangement comprising a slide, carriage or drawer}
G06K 13/0837	. . . .	{ the ejection arrangement using a heart-shaped cam}
G06K 13/0843	. . .	{from or back into the same magazine (automatic card files G06K 17/0003)}
G06K 13/085	. . .	{ using an arrangement for locking the inserted card}
G06K 13/0856	. . . .	{ the locking arrangement comprising a notch in the card and a complementary locking means in the card reading station}
G06K 13/0862	. . . .	{ the locking arrangement being of the rotate-slide and lock type, such as e.g. common in mobile phones}
G06K 13/0868	. . .	{ using an arrangement for keeping the feeding or insertion slot of the card station clean of dirt, or to avoid feeding of foreign or unwanted objects into the slot}
G06K 13/0875	. . . .	{ the arrangement comprising a shutter for blocking at least part of the card insertion slot}
G06K 13/0881	. . . . .	{ the shutter arranged to open only if the record carrier has been authenticated to enter the insertion slot}
G06K 13/0887	. . . .	{ the arrangement comprising a size filter for filtering out only cards having the proper size}
G06K 13/0893	. . . .	{ the arrangement comprising means for cleaning the card upon insertion}
G06K 13/10	. . .	from magazine to conveying arrangement
G06K 13/103	. . . .	using mechanical means
G06K 13/107	. . . .	using pneumatic means
G06K 13/12	. . .	from conveying arrangement to magazine
G06K 13/14	. . .	Card magazines, e.g. pocket, hopper (card magazines in general B42F)]
G06K 13/16	. .	Handling flexible sheets, e.g. cheques
G06K 13/18	.	the record carrier being longitudinally extended, e.g. punched tape (features of interest apart from data processing G11B; magnetic-tape drive G11B 15/00)
G06K 13/20	. .	Details
G06K 13/22	. . .	Capstans; Pinch rollers
G06K 13/24	. .	Guiding of record carriers; Recognising end of record carrier
G06K 13/26	. .	Winding-up or unwinding of record carriers; Driving of record carriers
G06K 13/28	. . .	continuously
G06K 13/30	. . .	intermittently

G06K 15/00		**Arrangements for producing a permanent visual presentation of the output data** { , e.g. computer output printers}(printing or plotting combined with another operation, e.g. with conveying, G06K 17/00){(construction of printing heads B41J 2/00; special arrangements for scanning and reproduction of pictures involving their transmission, e.g. facsimile H04N 1/00; for photocomposing B41B 19/00)}
G06K 15/002	.	{ Interacting with the operator }
G06K 15/005	. .	{ only locally }

G06K 15/007	. .	{ only remotely, e.g. at a host computer (dedicated computer interfaces to print systems G06F 3/1201)}
G06K 15/02	.	using printers
G06K 15/021	. .	{ Adaptations for printing on specific media}
G06K 15/022	. . .	{ for printing on continuous media, e.g. tapes}
G06K 15/023	. . .	{ for printing on transparent media}
G06K 15/024	. . .	{ for printing on segmented surfaces, e.g. sticker sheets, label rolls}
G06K 15/025	. .	{ Simulating output on another printing arrangement, e.g. proof output (matching two or more picture signal generators or two or more picture reproducers H04N 1/6052)}
G06K 15/026	. . .	{ introduction of proof output parameters}
G06K 15/027	. .	{ Test patterns and calibration (arrangements for controlling or analysing printing mechanisms of typewriters or selective printing units B41J 29/393 takes precedence; colour correction using test pattern analysis in general H04N 1/6033)}
G06K 15/028	. .	{by thermal printers}
G06K 15/029	. . .	{using optical beams}
G06K 15/04	. .	by rack-type printers
G06K 15/06	. .	by type-wheel printers
G06K 15/07	. . .	by continuously-rotating-type-wheel printers, e.g. rotating-type-drum printers
G06K 15/08	. .	by flight printing with type font moving in the direction of the printed line, e.g. chain printers
G06K 15/10	. .	by matrix printers {(G06K 15/028 takes precedence)}
G06K 15/102	. . .	{using ink jet print heads}
G06K 15/105	. . . .	{Multipass or interlaced printing}
G06K 15/107	. . . . .	{Mask selection}
G06K 15/12	. .	by photographic printing {e.g. by laser printers}
G06K 15/1204	. . .	{involving the fast moving of an optical beam in the main scanning direction (G06K 15/1233 to G06K 15/129 take precedence)}
G06K 15/1209	. . . .	{Intensity control of the optical beam (G06K 15/1223 takes precedence)}
G06K 15/1214	. . . . .	{by feedback}
G06K 15/1219	. . . .	{Detection, control or error compensation of scanning velocity or position, e.g. synchronisation (G06K 15/1223 takes precedence)}
G06K 15/1223	. . . .	{Resolution control, enlarging or reducing, edge or detail enhancement}
G06K 15/1228	. . .	{involving the fast moving of a light beam in two directions (G06K 15/1233 to G06K 15/129 take precedence)}
G06K 15/1233	. . .	{using a cathode-ray tube or an optical-fibre tube}
G06K 15/1238	. . .	{simultaneously exposing more than one point}
G06K 15/1242	. . . .	{on one main scanning line}
G06K 15/1247	. . . . .	{using an array of light sources, e.g. a linear array}
G06K 15/1252	. . . . .	{using an array of light modulators, e.g. a linear array}
G06K 15/1257	. . . .	{on more than one main scanning line}
G06K 15/1261	. . . . .	{using an array of light sources}
G06K 15/1266	. . . . . .	{using a moving array}
G06K 15/1271	. . . . .	{by light beam splitting}

G06K 15/1276	. . .	{adding two or more images, e.g. texturing, shading, form overlay}
G06K 15/128	. . .	{generating or processing printable items, e.g. characters}
G06K 15/1285	. . .	{Holographic scanning (in general G02B)}
G06K 15/129	. . .	{Colour printing}
G06K 15/1295	. . .	{using a particular photoreceptive medium}
G06K 15/14	. .	by electrographic printing, e.g. xerography; by magnetographic printing {(G06K 15/12 takes precedence)}
G06K 15/16	. .	Means for paper feeding or form feeding
G06K 15/18	. .	{ Conditioning data for presenting it to the physical printing elements (for data conditioning specific to a type of printer see subgroups G06K 15/028 to G06K 15/14; print job translation or parsing G06F 3/1244)}
G06K 15/1801	. . .	{ Input data handling means}
G06K 15/1802	. . . .	{ Receiving generic data, e.g. fonts, colour palettes}
G06K 15/1803	. . . .	{ Receiving particular commands}
G06K 15/1805	. . . . .	{ Receiving printer configuration commands}
G06K 15/1806	. . . . .	{ Receiving job control commands}
G06K 15/1807	. . . . . .	{ relating to the print image preparation}
G06K 15/1809	. . . . . .	{ relating to the printing process}
G06K 15/181	. . . .	{ Receiving print data characterized by its formatting, e.g. particular page description languages}
G06K 15/1811	. . . . .	{ including high level document description only}
G06K 15/1813	. . . . . .	{ Page description language recognition}
G06K 15/1814	. . . . .	{ including print-ready data, i.e. data already matched to the printing process}
G06K 15/1815	. . . . .	{ Receiving print data in mixed format}
G06K 15/1817	. . . .	{ Buffers}
G06K 15/1818	. . . .	{ Adaptations for accepting data from more than one source (managing interfaces G06K 15/4045)}
G06K 15/1819	. . . . .	{ for a same print job}
G06K 15/1821	. . . .	{ Sending feedback on the reception process to the data source, e.g. indication of full buffer}
G06K 15/1822	. . . .	{ Analysing the received data before processing}
G06K 15/1823	. . . . .	{ for evaluating the resources needed, e.g. rasterizing time, ink, paper stock}
G06K 15/1825	. . . .	{ Adapting the print data to an output condition, e.g. object trapping (trapping on rasterized data H04N 1/58)}
G06K 15/1826	. . . . .	{ Object trapping}
G06K 15/1827	. . .	{ Accessing generic data, e.g. fonts}
G06K 15/1828	. . . .	{ characterized by the kind of storage accessed}
G06K 15/183	. . . . .	{ Removable memories, e.g. font cartridges}
G06K 15/1831	. . . .	{ characterized by the format of the data}
G06K 15/1832	. . . . .	{ Compressed bitmaps}
G06K 15/1834	. . . . .	{ Outline coded data}
G06K 15/1835	. . .	{ Transforming generic data}

G06K 15/1836	. . . .	{ Rasterization}
G06K 15/1838	. . . . .	{ from outline-coded data}
G06K 15/1839	. . . . .	{ from skeleton-coded data}
G06K 15/184	. . . . .	{ from compressed bitmap data}
G06K 15/1842	. . . .	{ Geometric transformations, e.g. on raster data}
G06K 15/1843	. . . . .	{ Changing size or raster resolution}
G06K 15/1844	. . . .	{ Anti-aliasing raster data (G06K 15/1843 takes precedence)}
G06K 15/1846	. . . .	{Depleting generic raster data, e.g. characters (G06K 15/1843 takes precedence)}
G06K 15/1847	. . . . .	{ with provisions for image feature conservation or enhancement, e.g. character edge}
G06K 15/1848	. . .	{ Generation of the printable image}
G06K 15/1849	. . . .	{ using an intermediate representation, e.g. a list of graphical primitives}
G06K 15/1851	. . . . .	{ parted in a plurality of segments per page}
G06K 15/1852	. . . .	{involving combining data of different types}
G06K 15/1853	. . . . .	{ Combining raster data of different resolutions}
G06K 15/1855	. . . . .	{ Combining raster data and graphic primitives}
G06K 15/1856	. . . .	{ characterized by its workflow}
G06K 15/1857	. . . . .	{ involving parallel processing in the same printing apparatus}
G06K 15/1859	. . . . .	{ involving data processing distributed amongst different data processing apparatus}
G06K 15/186	. . . . .	{ taking account of feedback from an output condition, e.g. available inks, time constraints}
G06K 15/1861	. . . . .	{ taking account of a limited available memory space or rasterization time}
G06K 15/1863	. . . . . .	{ by rasterizing in sub-page segments}
G06K 15/1864	. . . . . .	{ by reducing the depth of some image elements' definition}
G06K 15/1865	. . . . . .	{ by compressing the rasterized print data}
G06K 15/1867	. . .	{ Post-processing of the composed and rasterized print image (Scanning, transmission or reproduction of documents H04N 1/00)}
G06K 15/1868	. . . .	{ for fitting to an output condition, e.g. paper colour or format}
G06K 15/1869	. . . .	{ Depleting the print image}
G06K 15/1871	. . . . .	{ with provisions for image features conservation or enhancement, e.g. conservation or enhancement of zone edges}
G06K 15/1872	. . . .	{ Image enhancement}
G06K 15/1873	. . . . .	{ Increasing spatial resolution; Anti-aliasing}
G06K 15/1874	. . . . . .	{ with provisions for treating some of the print data differently }
G06K 15/1876	. . . . .	{ Decreasing spatial resolution; Dithering}
G06K 15/1877	. . . . . .	{ with provisions for treating some of the print data differently }
G06K 15/1878	. . . . .	{ Adjusting colours (Image colour correction or control for documents in general H04N 1/60)}
G06K 15/188	. . . . . .	{ with provisions for treating some of the print data differently }
G06K 15/1881	. . . . .	{ Halftoning (halftoning of still images in general H04N 1/405, H04N 1/52)}

G06K 15/1882	. . . .	{ involving operator action}
G06K 15/1884	. . . . .	{ for choosing a level of output quality}
G06K 15/1885	. . . . .	{ for modifying the layout of a document}
G06K 15/1886	. . . .	{ Storage of the print image data or of parts thereof}
G06K 15/1888	. . . . .	{ Storage of image elements as generic data}
G06K 15/1889	. . . .	{ Merging with other data}
G06K 15/189	. . . . .	{ adding a background, e.g. a pattern}
G06K 15/1892	. . . . . .	{ adding a digitally readable background pattern}
G06K 15/1893	. . . . .	{ Form merging}
G06K 15/1894	. . .	{ Outputting the image data to the printing elements}
G06K 15/1896	. . . .	{ by means of alternately addressed storages}
G06K 15/1897	. . . .	{ while merging on-the-fly with other data}
G06K 15/1898	. . . .	{ while adapting the order of the data to the printing elements' arrangement, e.g. row-to-column conversion}
G06K 15/22	.	using plotters
G06K 15/225	. .	{using optical plotters}
G06K 15/40	.	{ Details not directly involved in printing, e.g. machine management, management of the arrangement as a whole or of its constitutive parts (computer driven print job management G06F 3/1237)}
G06K 15/4005	. .	{ Sharing resources or data with other data processing systems; Preparing such data (for distributed printing G06K 15/1859)}
G06K 15/401	. . .	{ Sharing memory space}
G06K 15/4015	. . .	{ Sharing generic data descriptions, e.g. fonts, colour palettes, rasterized objects}
G06K 15/402	. . .	{ Sharing data concerning the arrangement's configuration or current state (for managing optional units G06K 15/4025)}
G06K 15/4025	. .	{ Managing optional units, e.g. sorters, document feeders }
G06K 15/403	. . .	{ handling the outputted documents, e.g. staplers, sorters }
G06K 15/4035	. . . .	{ Managing mailboxes }
G06K 15/404	. . . .	{ Managing other optional outputs, e.g. collators, staplers }
G06K 15/4045	. .	{ Managing the interface to the data source, e.g. choosing an interface for data reception}
G06K 15/405	. . .	{ Choosing a data source, e.g. on a network }
G06K 15/4055	. .	{ Managing power consumption, e.g. standby mode (computer driven power saving management for a printer G06F 3/1221; power saving in a data processing device in general G06F 1/32)}
G06K 15/406	. . .	{ Wake-up procedures (start-up of a laser scanner G06K 15/1219)}
G06K 15/4065	. .	{ Managing print media, e.g. determining available sheet sizes (feeding means G06K 15/16)}
G06K 15/407	. .	{ Managing marking material, e.g. checking available colours }
G06K 15/4075	. . .	{ Determining remaining quantities of ink or toner}
G06K 15/408	. .	{ Handling exceptions, e.g. faults (computer driven error handling and recovery for a printer G06F 3/1234)}
G06K 15/4085	. . .	{ Handling paper jams }

| G06K 15/409 | . . . | { Handling power failures } |
| G06K 15/4095 | . . | { Secure printing (computer driven secure printing G06F 3/1238)} |

G06K 17/00   **Methods or arrangements for effecting co-operative working between equipments covered by two or more of the preceding main groups, e.g. automatic card files incorporating conveying and reading operations**

G06K 17/0003	.	{ Automatic card files incorporating selecting, conveying and possibly reading and/or writing operations}
G06K 17/0006	. .	{with random access selection of a record carrier from the card-file, e.g. the carriers are suspended on the selection device which in part of the card magazine}
G06K 17/0009	. .	{with sequential access selection of a record carrier from the card-file, e.g. relative movement between selecting device and card-file}
G06K 17/0012	. .	{with more than one selection steps, e.g. selection of a record carrier from a selected compartment of a compartmented storage (storage devices for articles B65G 1/0407)}
G06K 17/0016	.	{Selecting or retrieving of images by means of their associated code-marks, e.g. coded microfilm or microfiche (microfilm reading G03B 21/11; computers therefor G06F 17/30; teaching devices G09B 5/02; accessing record carriers G11B 27/002; static digital stores using optical elements G11C 13/04; intermediate storage of facsimile picture signals H04N 1/21)}
G06K 17/0019	. .	{for images on filmstrips}
G06K 17/0022	.	{arrangements or provisious for transferring data to distant stations, e.g. from a sensing device ("transfer between computer elements G06F 13/00"; data-transmission H04L)}
G06K 17/0025	. .	{ the arrangement consisting of a wireless interrogation device in combination with a device for optically marking the record carrier}
G06K 17/0029	. .	{ the arrangement being specially adapted for wireless interrogation of grouped or bundled articles tagged with wireless record carriers}
G06K 17/0032	.	{Apparatus for automatic testing and analysing marked record carriers, used for examinations of the multiple choice answer type (teaching apparatus working with questions and answers G09B 7/00)}

G06K 19/00   **Record carriers for use with machines and with at least a part designed to carry digital markings** (record carriers adapted for controlling specific machines, see the appropriate subclass for the machine, e.g. B23Q, D03C, G10F, H04L; form printing B41; file cards B42F 19/00; record carriers in general G11)

G06K 19/005	.	{ the record carrier comprising an arrangement to facilitate insertion into a holding device, e.g. an arrangement that makes the record carrier fit into an etui or a casing (ticket holders A45C 11/18)}
G06K 19/02	.	characterised by the selection of materials, e.g. to avoid wear during transport through the machine
G06K 19/022	. .	{Processes or apparatus therefor}
G06K 19/025	. .	{ the material being flexible or adapted for folding, e.g. paper or paper-like materials used in luggage labels, identification tags, forms or identification documents carrying RFIDs (methods for testing the genuineness of valuable papers, e.g. banknotes or passports G07D 7/00; constructional features of booklets

and the like B42D)}

G06K 19/027 . . { the material being suitable for use as a textile, e.g. woven-based RFID-like labels designed for attachment to laundry items (markings attached to laundry items in general D06F 93/00)}

G06K 19/04 . characterised by the shape

G06K 19/041 . . {Constructional details (G06K 19/06 takes precedence)}

G06K 19/042 . . . { the record carrier having a form factor of a credit card and including a small sized disc, e.g. a CD or DVD (disc shaped data carriers in general, see G11B 20/00 and G11B 23/00)}

G06K 19/044 . . . . { comprising galvanic contacts for contacting an integrated circuit chip thereon}

G06K 19/045 . . . . { the record carrier being of the non-contact type, e.g. RFID, and being specially adapted for attachment to a disc e.g. a CD or DVD}

G06K 19/047 . . . { the record carrier being shaped as a coin or a gambling token}

G06K 19/048 . . . { the record carrier being shaped as a key}

G06K 19/06 . characterised by the kind of the digital marking, e.g. shape, nature, code

G06K 19/06009 . . {with optically detectable marking (G06K 19/063, G06K 19/08 take precedence)}

G06K 19/06018 . . . {one-dimensional coding}

G06K 19/06028 . . . . {using bar codes}

G06K 19/06037 . . . {multi-dimensional coding}

G06K 19/06046 . . . {Constructional details}

G06K 19/06056 . . . . { the marking comprising a further embedded marking, e.g. a 1D bar code with the black bars containing a smaller sized coding}

G06K 19/06065 . . . . { the marking being at least partially represented by holographic means (holographic marking in general, see G06K 19/16)}

G06K 19/06075 . . . . { the marking containing means for error correction}

G06K 19/06084 . . . . { the marking being based on nano-particles or micro beads}

G06K 19/06093 . . . . { the marking being constructed out of a plurality of similar markings, e.g. a plurality of barcodes randomly oriented on an object}

G06K 19/06103 . . . . { the marking being embedded in a human recognizable image, e.g. a company logo with an embedded two-dimensional code}

G06K 19/06112 . . . . { the marking being simulated using a light source, e.g. a barcode shown on a display or a laser beam with time-varying intensity profile}

G06K 19/06121 . . . . { the marking having been punched or cut out, e.g. a barcode machined in a metal work-piece}

G06K 19/06131 . . . . { the marking comprising a target pattern, e.g. for indicating the center of the bar code or for helping a bar code reader to properly orient the scanner or to retrieve the bar code inside of an image}

G06K 19/0614 . . . . { the marking being selective to wavelength, e.g. color barcode or barcodes only visible under UV or IR (methods or arrangements for sensing record carriers using a selected wavelength, see G06K 7/12)}

G06K 19/0615 . . . . { the marking being of the rewritable type, e.g. thermo-chromic barcodes}

G06K 19/06159 . . . . { the marking being relief type, e.g. three-dimensional bar codes engraved in a support}

G06K 19/06168 . . . . { the marking being a concentric barcode}

G06K 19/06178 . . . . { the marking having a feature size being smaller than can be seen by the

unaided human eye}

G06K 19/06187	. .	{with magnetically detectable marking}
G06K 19/06196	. . .	{Constructional details}
G06K 19/06206	. . .	{ the magnetic marking being emulated}
G06K 19/063	. .	the carrier being marginally punched or notched, e.g. having elongated slots
G06K 19/067	. .	Record carriers with conductive marks, printed circuits or semiconductor circuit elements, e.g. credit or identity cards {also with resonating or responding marks without active components}
G06K 19/0672	. . .	{with resonating marks}
G06K 19/0675	. . . .	{ the resonating marks being of the surface acoustic wave [SAW] kind (SAW devices per se H03H 9/64)]
G06K 19/0677	. . . .	{ the record carrier being programmable}
G06K 19/07	. . .	with integrated circuit chips
G06K 19/0701	. . . .	{ at least one of the integrated circuit chips comprising an arrangement for power management}
G06K 19/0702	. . . . .	{ the arrangement including a battery}
G06K 19/0703	. . . . . .	{ the battery being onboard of a handheld device, e.g. a smart phone or PDA}
G06K 19/0704	. . . . . .	{ the battery being rechargeable, e.g. solar batteries}
G06K 19/0705	. . . . . .	{ the battery being connected to a power saving arrangement}
G06K 19/0706	. . . . . .	{ the battery being replaceable}
G06K 19/0707	. . . . .	{ the arrangement being capable of collecting energy from external energy sources. e.g. thermocouples, vibration, electromagnetic radiation (G06K 19/0702 takes precedence)}
G06K 19/0708	. . . . . .	{ the source being electromagnetic or magnetic}
G06K 19/0709	. . . .	{ the source being an interrogation field}
G06K 19/071	. . . .	{ the source being a field other than an interrogation field, e.g. WLAN, cellular phone network}
G06K 19/0711	. . . . . .	{ the source being mechanical or acoustical}
G06K 19/0712	. . . . .	{ the arrangement being capable of triggering distinct operating modes or functions dependent on the strength of an energy or interrogation field in the proximity of the record carrier (active means for hindering electromagnetic reading or writing G06K 19/07336)}
G06K 19/0713	. . . . .	{ the arrangement including a power charge pump}
G06K 19/0715	. . . . .	{ the arrangement including means to regulate power transfer to the integrated circuit}
G06K 19/0716	. . . .	{ at least one of the integrated circuit chips comprising a sensor or an interface to a sensor}
G06K 19/0717	. . . . .	{ the sensor being capable of sensing environmental conditions such as temperature history or pressure}
G06K 19/0718	. . . . .	{ the sensor being of the biometric kind, e.g. fingerprint sensors (fingerprint sensors in general, see G06K 9/00; biometric access-control systems in general, see G07C 9/00)}
G06K 19/0719	. . . .	[{ at least one of the integrated circuit chips comprising an arrangement for application selection, e.g. an acceleration sensor or a set of radio buttons (application selection on smart cards using pure software control, see G07F 7/10)}
G06K 19/072	. . . .	{ the record carrier comprising a plurality of integrated circuit chips}

G06K 19/0721	. . . . .	{ the plurality of chips mutually cooperating so as to represent itself to the world as a single entity}
G06K 19/0722	. . . .	{ comprising an arrangement for testing the record carrier}
G06K 19/0723	. . . .	{ the record carrier comprising an arrangement for non-contact communication, e.g. wireless communication circuits on transponder cards, non-contact smart cards or RFIDs}
G06K 19/0724	. . . . .	{ the arrangement being a circuit for communicating at a plurality of frequencies, e.g. for managing time multiplexed communication over at least two antennas of different types}
G06K 19/0725	. . . . .	{ the arrangement being a circuit for emulating a plurality of record carriers, e.g. a single RFID tag capable of representing itself to a reader as a cloud of RFID tags}
G06K 19/0726	. . . . .	{ the arrangement including a circuit for tuning the resonance frequency of an antenna on the record carrier}
G06K 19/0727	. . . . .	{ the arrangement being a circuit facilitating integration of the record carrier with a hand-held device such as a smart phone of PDA}
G06K 19/0728	. . . . .	{ the arrangement being an optical or sound-based communication interface}
G06K 19/073	. . . .	Special arrangements for circuits, e.g. for protecting identification code in memory (protection against unauthorised use of computer memories G06F 12/14)
G06K 19/07309	. . . . .	{ Means for preventing undesired reading or writing from or onto record carriers}
G06K 19/07318	. . . . . .	{ by hindering electromagnetic reading or writing (jamming of communication, counter-measures H04K 3/00; secret communication H04K 1/00)}
G06K 19/07327	. . . .	{ Passive means, e.g. Faraday cages (Faraday-type protection of electric circuits in general H05K 9/00)}
G06K 19/07336	. . . .	{ Active means, e.g. jamming or scrambling of the electromagnetic field}
G06K 19/07345	. . . . . .	{ by activating or deactivating at least a part of the circuit on the record carrier, e.g. ON/OFF switches}
G06K 19/07354	. . . .	{ by biometrically sensitive means, e.g. fingerprint sensitive (fingerprint sensors in general G06K 9/00006; biometrically activated access control G07C 9/00071)}
G06K 19/07363	. . . . . .	{ by preventing analysis of the circuit, e.g. dynamic or static power analysis or current analysis}
G06K 19/07372	. . . . . .	{ by detecting tampering with the circuit (tampering detection for semi-conductor circuits in general H01L 23/58)}
G06K 19/07381	. . . .	{ with deactivation or otherwise incapacitation of at least a part of the circuit upon detected tampering}
G06K 19/0739	. . . .	{ the incapacitated circuit being part of an antenna}
G06K 19/077	. . . .	Constructional details, e.g. mounting of circuits in the carrier
G06K 19/07701	. . . . .	{ the record carrier comprising an interface suitable for human interaction}
G06K 19/07703	. . . . . .	{ the interface being visual}
G06K 19/07705	. . . .	{ the visual interface being a single light or small number of lights capable of being switched on or off, e.g. a series of LEDs}
G06K 19/07707	. . . .	{ the visual interface being a display, e.g. LCD or electronic ink}
G06K 19/07709	. . . . . .	{ the interface being a keyboard}

G06K 19/07711	. . . . . .	{ the interface being an audio interface}
G06K 19/07713	. . . . . .	{ the interface, upon reception of an interrogation signal, being capable of signaling to indicate its position to a user or a detection device}
G06K 19/07715	. . . . . .	{ the interface being used to indicate that the record carrier is active, e.g. a blinking light to indicate that the record carrier is busy communicating with a secondary device or busy computing}
G06K 19/07716	. . . . .	{ the record carrier comprising means for customization, e.g. being arranged for personalization in batch}
G06K 19/07718	. . . . .	{ the record carrier being manufactured in a continuous process, e.g. using endless rolls}
G06K 19/0772	. . . . .	{ Physical layout of the record carrier}
G06K 19/07722	. . . . . .	{ the record carrier being multilayered, e.g. laminated sheets (flat articles in general, see B32B 37/00)}
G06K 19/07724	. . . . . .	{ the record carrier being at least partially made by a molding process (molding in general B29C 45/14)}
G06K 19/07726	. . . . . .	{ the record comprising means for indicating first use, e.g. a frangible layer}
G06K 19/07728	. . . . . .	{ the record carrier comprising means for protection against impact or bending, e.g. protective shells or stress-absorbing layers around the integrated circuit}
G06K 19/0773	. . . . . .	{ the record carrier comprising means to protect itself against external heat sources}
G06K 19/07732	. . . . . .	{ the record carrier having a housing or construction similar to well-known portable memory devices, such as SD cards, USB or memory sticks (housings for electrical equipment in general, see H05K 5/02)}
G06K 19/07733	. . . . . .	{ the record carrier containing at least one further contact interface not conform ISO-7816}
G06K 19/07735	. . . . . .	{ the record carrier comprising means for protecting against electrostatic discharge}
G06K 19/07737	. . . . .	{ the record carrier consisting of two or more mechanically separable parts}
G06K 19/07739	. . . . . .	{ comprising a first part capable of functioning as a record carrier on its own and a second part being only functional as a form factor changing part, e.g. SIM cards type ID 0001, removably attached to a regular smart card form factor}
G06K 19/07741	. . . . . .	{ comprising a first part operating as a regular record carrier and a second attachable part that changes the functional appearance of said record carrier, e.g. a contact-based smart card with an adapter part which, when attached to the contact card makes the contact card function as a non-contact card}
G06K 19/07743	. . . . .	{External electrical contacts}
G06K 19/07745	. . . . .	{Mounting details of integrated circuit chips}
G06K 19/07747	. . . . . .	{ at least one of the integrated circuit chips being mounted as a module}
G06K 19/07749	. . . . .	{ the record carrier being capable of non-contact communication, e.g. constructional details of the antenna of a non-contact smart card}
G06K 19/0775	. . . . . .	{ arrangements for connecting the integrated circuit to the antenna}
G06K 19/07752	. . . .	{ using an interposer}

G06K 19/07754	. . . .	{ the connection being galvanic}
G06K 19/07756	. . . .	{ the connection being non-galvanic, e.g. capacitive}
G06K 19/07758	. . . . . .	{ arrangements for adhering the record carrier to further objects or living beings, functioning as an identification tag}
G06K 19/0776	. . . .	{ the adhering arrangement being a layer of adhesive, so that the record carrier can function as a sticker}
G06K 19/07762	. . . .	{ the adhering arrangement making the record carrier wearable, e.g. having the form of a ring, watch, glove or bracelet (record carriers for insertion in the human body for medical purposes A61B 19/00; record carriers adapted for attachment to animals A01K 11/00)}
G06K 19/07764	. . . .	{ the adhering arrangement making the record carrier attachable to a tire (tire temperature or pressur control arrangements, see B60C 23/00)}
G06K 19/07766	. . . . . .	{ comprising at least a second communication arrangement in addition to a first non-contact communication arrangement}
G06K 19/07767	. . . .	{ the first and second communication means being two different antennas types, e.g. dipole and coil type, or two antennas of the same kind but operating at different frequencies}
G06K 19/07769	. . . .	{ the further communication means being a galvanic interface, e.g. hybrid or mixed smart cards having a contact and a non-contact interface}
G06K 19/07771	. . . . . .	{ the record carrier comprising means for minimising adverse effects on the data communication capability of the record carrier, e.g. minimising Eddy currents induced in a proximate metal or otherwise electromagnetically interfering object}
G06K 19/07773	. . . . . .	{ Antenna details (antennas for wireless devices, e.g. RFID tags, in general H01Q 1/22)}
G06K 19/07775	. . . .	{ the antenna being on-chip}
G06K 19/07777	. . . .	{ the antenna being of the inductive type}
G06K 19/07779	. . . .	{ the inductive antenna being a coil}
G06K 19/07781	. . . .	{ the coil being fabricated in a winding process}
G06K 19/07783	. . . .	{ the coil being planar}
G06K 19/07784	. . . .	{ the inductive antenna consisting of a plurality of coils stacked on top of one another}
G06K 19/07786	. . . .	{ the antenna being of the HF type, such as a dipole}
G06K 19/07788	. . . .	{ the antenna being of the capacitive type}
G06K 19/0779	. . . .	{ the antenna being foldable or folded}
G06K 19/07792	. . . .	{ the antenna adapted for extending in three dimensions}
G06K 19/07794	. . . .	{ the record carrier comprising a booster or auxiliary antenna in addition to the antenna connected directly to the integrated circuit}
G06K 19/07796	. . . . . .	{ arrangements on the record carrier to allow stacking of a plurality of similar record carriers, e.g. to avoid interference between the non-contact communication of the plurality of record carriers}
G06K 19/07798	. . . . . .	{ part of the antenna or the integrated circuit being adapted for rupturing or breaking, e.g. record carriers functioning as sealing devices for detecting not-authenticated opening of containers (electronic seals G09F 3/03)}
G06K 19/08	. .	using markings of different kinds {or more than one marking of the same kind} in

the same record carrier, e.g. one marking being sensed by optical and the other by magnetic means

G06K 19/083	. . .	{Constructional details}
G06K 19/086	. . . .	{ with markings consisting of randomly placed or oriented elements, the randomness of the elements being useable for generating a unique identifying signature of the record carrier, e.g. randomly placed magnetic fibers or magnetic particles in the body of a credit card}
G06K 19/10	. . .	at least one kind of marking being used for authentication, e.g. of credit or identity cards ({ identification cards not to be read by a machine B42D 15/10}; verification of coded identity or credit cards in mechanisms actuated by them G07F 7/12; { printed identity or similar identification-bearing cards not for use with a machine B42D 15/10})
G06K 19/12	. . . .	the marking being sensed by magnetic means
G06K 19/14	. . . .	the marking being sensed by radiation
G06K 19/145	. . . . .	{ at least one of the further markings being adapted for galvanic or wireless sensing, e.g an RFID tag with both a wireless and an optical interface or memory, or a contact type smart card with ISO 7816 contacts and an optical interface or memory}
G06K 19/16	. . . .	the marking being a hologram or diffraction grating
G06K 19/18	. . . .	Constructional details

G06K 21/00		**Information retrieval from punched cards designed for manual use or handling by machine** (G06K 19/00 takes precedence)**; Apparatus for handling such cards, e.g. marking or correcting**
G06K 21/002	.	{Selecting of marginally notched cards (card filling arrangements B42F 17/00)}
G06K 21/005	. .	{the selected cards being displaced laterally relative to the remaining stationary card-file}
G06K 21/007	. .	{the selected cards being restrained and the remaining card-file being laterally displaced}
G06K 21/02	.	in which coincidence of markings is sensed mechanically, e.g. by needle
G06K 21/04	.	in which coincidence of markings is sensed optically, e.g. peek-a-boo system
G06K 21/06	.	Apparatus or tools adapted for slotting or otherwise marking information-retrieval cards (tools for perforating in general B26F)
G06K 21/08	.	Apparatus or tools for correcting punching or slotting errors {and regeneration of record carriers}
G06K 21/085	. .	{for punched tapes}

G06K 2007/00		**Methods or arrangements for sensing record carriers,** { e.g. for reading patterns}(G06K 9/00 takes precedence)
G06K 2007/10	.	by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation
G06K 2007/10485	. .	Arrangement of optical elements
G06K 2007/10495	. .	Circuits for pulse forming, amplifying

G06K 2007/10504	. .	Data fields affixed to objects or articles
G06K 2007/10514	. . .	Randomly orientated data fields
G06K 2007/10524	. .	Hand-held scanners
G06K 2007/10534	. . .	Scanner to be worn on a finger or on a wrist

G06K 2009/00   **Methods or arrangements for reading or recognising printed or written characters or for recognising patterns, e.g. fingerprints** (processing or analysis of tracks of nuclear particles G01T 5/02; { information retrieval G06F 17/30; medical diagnosis **G06F 19/00A2**; recognition of molecular sequences **G06F 19/00C**; radio frequency identification G06K 7/00; recognition of barcodes and similar code images G06K 7/10; computer systems based on specific computational models G06N; image analysis, inspection, positioning or tracking G06T 7/00; recognition of acoustic speech signals G10L 15/00; acoustic speaker identification G10L 17/00})

> **NOTE**
>
> 1. In this group, the following term is used with the meaning indicated:
> - "recognising" includes several functions such as extracting features, clustering, classifying or matching.
> 2. IPC subgroups G06K 9/20, G06K 9/36, G06K 9/62 and G06K 9/74 refer to methods or arrangements that can be applied to a pattern independently of its nature or to that are applied to specific patterns not included in the subgroups in the range G06K 9/00006 to G06K 9/00852. The CPC subgroups in the range G06K 9/00006 to G06K 9/00852 refer to the same methods or arrangements when applied or specially adapted to the specific patterns to which these subgroups relate.
> 3. The present group does not cover the use of recognised patterns in specific applications, e.g. the use of traced gestures recognised as commands to be input to a computer is covered by the groups under G06F 3/00

G06K 2009/00006	.	{Acquiring or recognising fingerprints or palmprints (non-computerised biometric identification A61B 5; means for preventing unauthorised use of vehicles B60R 25/00; security in computer systems G06F 21/00; secure access to buildings G07C 9/00; secret or secure communication H04L 9/00; means for preventing unauthorised telephone calls H04M 1/667)}
G06K 2009/00013	. .	{ Image acquisition (materials for developing fingerprints, means for visual identification A61B 5/1172)}
G06K 2009/0006	. . .	with light passing through the finger
G06K 2009/00221	.	{Acquiring or recognising human faces, facial parts, facial sketches, facial expressions}
G06K 2009/00322	. .	estimating age from face image; using age information for improving recognition
G06K 2009/00328	. .	metadata assisted face recognition
G06K 2009/00362	.	{Recognising human body or animal bodies, e.g. vehicle occupant, pedestrian; Recognising body parts, e.g. hand (passenger detection systems B60N 2/002; handprints G06K 9/00006; face and facial components G06K 9/00221; eyes G06K 9/00597; determining position of passenger G06T 7/004)}
G06K 2009/00395	. .	Biometrics derived from hands; static hand pose gestures
G06K 2009/00442	.	{ Document analysis and understanding; Document recognition}
G06K 2009/00489	. .	Editing text-bitmaps, e.g. alignment, spacing; Semantic analysis of bitmaps of text

without OCR

G06K 2009/00577	.	{ Recognising objects characterised by unique random properties, i.e. objects having a physically unclonable function [PUF], e.g. authenticating objects based on their unclonable texture (verifying genuineness of valuable papers G07D 7/00)}
G06K 2009/00583	. .	Recognition of the sensor which acquired the data, e.g. based on sensor idiosyncrasies
G06K 2009/0059	. .	markers for authenticating, copy prevention
G06K 2009/00624	.	{ Recognising scenes, i.e. recognition of a whole field of perception; recognising scene-specific objects (image retrieval G06F 17/30244; video retrieval G06F 17/30781; image analysis and image segmentation, e.g. pixel labelling G06T 7/00; alarm systems G08B; traffic control G08G; pictorial communication H04N)}
G06K 2009/0063	. .	{ Recognising patterns in remote scenes, e.g. aerial images, vegetation versus urban areas (radar and similar technologies G01S; segmentation for general image processing G06T 7/0079)}
G06K 2009/00644	. . .	using hyperspectral data, i.e. more or other wavelengths than RGB
G06K 2009/00711	. .	{ Recognising video content, e.g. extracting audiovisual features from movies, extracting representative key-frames, discriminating news vs. sport content (information retrieval in video databases G06F 17/30781; recognition of movements or behaviour G06K 9/00335; extracting overlay text **G06K 9/32R1T2**; fusion techniques G06K 9/6288; speech recognition G10L15; indexing of audio and video or audiovisual data on record media using extracted features or characteristics G11B 27/28)}
G06K 2009/00738	. . .	Event detection
G06K 2009/00885	.	{ Biometric patterns not provided for under G06K 9/00006, G06K 9/00154, G06K 9/00335 , G06K 9/00362 , G06K 9/00597; Biometric specific functions not specific to the kind of biometric}
G06K 2009/00932	. .	Subcutaneous biometric features; Blood vessel patterns
G06K 2009/00939	. .	Biometric patterns based on physiological signals, e.g. heartbeat, blood flow
G06K 2009/00946	. .	for forensic purposes
G06K 2009/00953	. .	Measures to keep reference information secret, e.g. cancellable biometrics
G06K 2009/00959	. . .	Performing matching on a personal external card, e.g. to avoid submitting reference information
G06K 2009/00966	. .	Solutions for unknown imposter distribution
G06K 2009/20	.	Image acquisition
G06K 2009/2045	. .	using multiple overlapping images
G06K 2009/22	. .	using hand-held instruments
G06K 2009/226	. . .	by sensing position defining codes on a support
G06K 2009/32	. .	Aligning or centering of the image pick-up or image-field
G06K 2009/3216	. . .	{ by locating a pattern (G06K 9/3208, G06K 9/3275 take precedence; centering within a document with a marking G06K 9/2063)}
G06K 2009/3225	. . . .	Special marks for positioning
G06K 2009/3291	. . .	Pattern tracking
G06K 2009/36	.	Image preprocessing, i.e. processing the image information without deciding about the identity of the image (image data processing or generation, in general G06T)

NOTE

Group G06K 9/58 takes precedence over groups G06K 9/38 to G06K 9/54

G06K 2009/363	. .	Correcting image deformation, e.g. trapezoidal deformation caused by perspective
G06K 2009/366	. .	Interactive preprocessing or shape modelling, e.g. assignment of feature points by a user
G06K 2009/46	. .	Extraction of features or characteristics of the image {(segmentation of touching or overlapping patterns G06K 9/34; edge detection for feature extraction G06K 9/4604; segmentation or edge detection for general image processing G06T 7/0079)}
G06K 2009/4657	. . .	involving specific hyperspectral computations of features
G06K 2009/4666	. . .	regional/local feature not essentially salient, e.g. local binary pattern
G06K 2009/4695	. . .	sparse representation
G06K 2009/48	. . .	by coding the contour of the pattern {contour related features or features from contour like patterns, e.g. hand-drawn point-sequence}
G06K 2009/484	. . . .	using an approximation function
G06K 2009/485	. . . .	using a gradient analysis
G06K 2009/487	. . . .	using statistical shape modelling, e.g. point distribution model
G06K 2009/488	. . . .	using wavelet analysis
G06K 2009/58	. .	using optical means
G06K 2009/585	. . .	using a wedge-ring detector, e.g. in Fourier space
G06K 2009/62	.	Methods or arrangements for recognition using electronic means (learning machines G06F 15/18; digital correlation G06F 17/15; analogue correlation G06G 7/19)
G06K 2009/6201	. .	{ Matching; Proximity measures}
G06K 2009/6213	. . .	region based matching
G06K 2009/6217	. .	{ Design or setup of recognition systems and techniques; Extraction of features in feature space; Clustering techniques; Blind source separation (regression analysis G06F 17/18)}
G06K 2009/6232	. . .	{Extracting features by transforming the feature space, e.g. multidimensional scaling; Mappings, e.g. subspace methods}
G06K 2009/6234	. . . .	{based on a discrimination criterion, e.g. discriminant analysis (discriminant functions G06K 9/6227)}
G06K 2009/6235	. . . . .	{ Rendering the within-class scatter matrix nonsingular}
G06K 2009/6236	. . . . . .	involving a first projection stage, e.g. Fisherface techniques
G06K 2009/6237	. . . . . .	involving an optimisation, e.g. using regularisation techniques
G06K 2009/6238	. . . . . .	involving a subspace restriction, e.g. nullspace techniques
G06K 2009/6288	. .	{ Fusion techniques, i.e. combining data from various sources, e.g. sensor fusion (bootstrap techniques, e.g. boosting G06K 9/6256; data unmixing G06K 9/624; image matching G06K 9/64; fusion of acoustic speaker inputs **G10L 17/00B8M**)}
G06K 2009/6294	. . .	belief theory, e.g. Dempster-Shafer
G06K 2009/6295	. . .	fusion by voting
G06K 2009/68	. .	using sequential comparisons of the image signals with a plurality of references {in which the sequence of the image signals or the references is relevant}, e.g. addressable memory

G06K 2009/685	. . .	{Involving plural approaches, e.g. verification by template match; resolving confusion among similar patterns, e.g. O & Q (G06K 9/6807 takes precedence)}
G06K 2009/6864	. . . .	Combination of methods, e.g. classifiers, working on the same input data
G06K 2009/6871	. . . .	Combination of methods, e.g. classifiers, working on different input data, e.g. sensor fusion

G06K 2017/00		**Methods or arrangements for effecting co-operative working between equipments covered by two or more of the preceding main groups, e.g. automatic card files incorporating conveying and reading operations**
G06K 2017/0035	.	Aspects not covered by other subgroups
G06K 2017/0038	. .	Processing documents, e.g. checks, formulars
G06K 2017/0041	. .	Personalising cards or checks, issuing personal tickets, passbooks or the like
G06K 2017/0045	. .	Tracking objects or persons
G06K 2017/0048	. .	Grouping, sorting, transporting, distributing documents or goods
G06K 2017/0051	. .	Stock management, inventory systems
G06K 2017/0054	. .	for collecting waste
G06K 2017/0058	. .	for collecting milk
G06K 2017/0061	. .	for processing photo orders
G06K 2017/0064	. .	for fraud control purposes
G06K 2017/0067	. .	for commercial purposes, e.g. transactions, payments, ordering, games
G06K 2017/007	. .	for multiple use or various applications
G06K 2017/0074	. .	for use in library or the like systems
G06K 2017/0077	. .	for checking, inspecting or history purposes, e.g. histograms
G06K 2017/008	. .	for use in word processing or the like systems
G06K 2017/0083	. .	Generating labels
G06K 2017/0087	. .	for automatic, e.g. process, control purposes
G06K 2017/009	. .	for use in medical applications
G06K 2017/0093	. .	Information-providing systems
G06K 2017/0096	. .	Information-recording systems, e.g. data logging

G06K 2019/00		**Record carriers for use with machines and with at least a part designed to carry digital markings** (record carriers adapted for controlling specific machines, see the appropriate subclass for the machine, e.g. B23Q, D03C, G10F, H04L; form printing B41; file cards B42F 19/00; record carriers in general G11)
G06K 2019/06	.	characterised by the kind of the digital marking, e.g. shape, nature, code
G06K 2019/06215	. .	Aspects not covered by other subgroups
G06K 2019/06225	. . .	using wavelength selection, e.g. colour code
G06K 2019/06234	. . .	miniature-code
G06K 2019/06243	. . .	concentric-code
G06K 2019/06253	. . .	for a specific application
G06K 2019/06262	. . .	with target- or other orientation-indicating feature
G06K 2019/06271	. . .	Relief-type marking

| G06K 2019/06281 | **. . .** | rewritable |
| G06K 2019/0629 | **. . .** | Holographic, diffractive or retroreflective recording |

G06K 2207/00 **Other aspects** (not used)

G06K 2207/101	**.**	dummy title (not used)
G06K 2207/1011	**. .**	Aiming
G06K 2207/1012	**. .**	Special detection of object
G06K 2207/1013	**. .**	Multi-focal
G06K 2207/1015	**. .**	Hologram
G06K 2207/1016	**. .**	Motor control or optical moving unit control
G06K 2207/1017	**. .**	Programmable
G06K 2207/1018	**. .**	Source control

G06K 2209/00 **Indexing scheme relating to methods or arrangements for reading or recognising printed or written characters or for recognising patterns, e.g. fingerprints**

G06K 2209/01	**.**	Character recognition
G06K 2209/011	**. .**	of Kanji, Hiragana or Katakana characters
G06K 2209/013	**. .**	of non-latin characters other than Kanji, Hiragana or Katakana characters
G06K 2209/015	**. .**	Solutions for problems related to non uniform document background
G06K 2209/03	**.**	Recognising information on displays, dials, clocks.
G06K 2209/05	**.**	Recognition of patterns in medical or anatomical images
G06K 2209/051	**. .**	of internal organs
G06K 2209/053	**. .**	of protuberances, polyps nodules, etc.
G06K 2209/055	**. .**	of skeletal patterns
G06K 2209/057	**. .**	of medical instruments
G06K 2209/07	**.**	Recognition of patterns in DNA micro array
G06K 2209/09	**.**	Recognition of patterns representing particular kinds of hidden objects, e.g. weapons, explosives, drugs
G06K 2209/15	**.**	Detection and recognition of car license plates
G06K 2209/17	**.**	Recognition of food, fruit, vegetables
G06K 2209/19	**.**	Recognition of objects for industrial automation
G06K 2209/21	**.**	Target detection

G06K 2209/23	.	Detecting or categorising vehicles
G06K 2209/25	.	Recognition of logos
G06K 2209/27	.	Recognition assisted with metadata
G06K 2209/29	.	Technique has transformation invariance effect
G06K 2209/40	.	Acquisition of 3D measurements of objects
G06K 2209/401	. .	using special illumination
G06K 2209/403	. .	Computational image acquisition in electron microscopy
G06K 2209/50	.	Indexing scheme for indicating the type of disclosure document
G06K 2209/501	. .	Book
G06K 2209/502	. .	Book chapter
G06K 2209/503	. .	Survey article
G06K 2209/504	. .	Technical report or standard
G06K 2209/505	. .	Master, PhD or other thesis
G06K 2209/506	. .	Tutorial

G06K 2215/00		**Arrangements for producing a permanent visual presentation of the output data** (not used)
G06K 2215/0002	.	Handling the output data
G06K 2215/0005	. .	Accepting output data; Preparing data for the controlling system
G06K 2215/0008	. . .	Downloading generic data
G06K 2215/0011	. . .	characterised by a particular command or data flow, e.g. Page Description Language, configuration commands
G06K 2215/0014	. . .	Transforming the printer input data into internal codes
G06K 2215/0017	. . .	Preparing data for the controlling system, e.g. status, memory data
G06K 2215/002	. .	Generic data access
G06K 2215/0022	. . .	characterised by the storage means used
G06K 2215/0025	. . . .	Removable memories, e.g. cartridges
G06K 2215/0028	. . .	characterised by the format per se
G06K 2215/0031	. . . .	Compressed bit maps
G06K 2215/0034	. . . .	Outline coding
G06K 2215/0037	. . .	depending on an output condition, e.g. size, resolution
G06K 2215/004	. .	Generic data transformation
G06K 2215/0042	. . .	Rasterisation
G06K 2215/0045	. . . .	Converting outline to bitmap
G06K 2215/0048	. . . .	Converting skeleton to bitmap
G06K 2215/0051	. . . .	from compressed bitmap, e.g. run length
G06K 2215/0054	. . .	Geometric transformations, e.g. on rasterised data
G06K 2215/0057	. . . .	Sizing and resolution changes

G06K 2215/006	. . .	Anti-aliasing raster data
G06K 2215/0062	. .	combining generic and host data, e.g. filling a raster
G06K 2215/0065	. . .	Page or partial page composition
G06K 2215/0068	. . . .	Line composition, e.g. kerning
G06K 2215/0071	. . .	Post-treatment of the composed image, e.g. compression, rotation
G06K 2215/0074	. . . .	Depleting the image
G06K 2215/0077	. .	Raster outputting to the print element(s)
G06K 2215/008	. . .	from more than one raster memory
G06K 2215/0082	.	Architecture adapted for a particular function
G06K 2215/0085	. .	Error recovery
G06K 2215/0088	. .	Collated printing
G06K 2215/0091	. .	Outputting only video data, e.g. Hard copy of CRT display
G06K 2215/0094	. .	Colour printing
G06K 2215/0097	. .	Printing on special media, e.g. labels, envelopes
G06K 2215/101	.	involving the use of ink jets
G06K 2215/111	.	with overlapping swaths